PIONEER

Service Manual

REPAIR & ADJUSTMENTS

ORDER NO.
ARP-862-0

AUDIO/VIDEO STEREO RECEIVER

SX-V500(BK)

MODEL SX-V500(BK) COMES IN THREE VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
KU	AC120V only	U.S.A model
KC	AC120V only	Canada model
S/G	AC110V, 120V, 220V, 240V (switchable)	U.S. Military model

- This service manual is applicable to the KU type.
- As to the S/G type, please refer to the additional service manual (ARP-888).
- As to the KC type, please refer to the additional service manual (ARP-863).
- As to the circuit descriptions, please refer to the SX-V500(BK) service manual (ARP-894).
- Ce manual d'instruction se refère au mode de réglage, en français.
- Este manual de servicio trata del método ajuste escrito en español.

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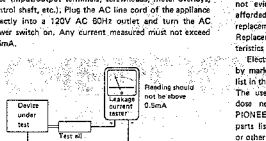
1. SAFETY INFORMATIONS

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Leakage current tester
Reading should not be above 0.5mA
Device under test
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a Δ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

• NOTE

Precautions on Lithium Battery

Safe Replacing.

1. Solder it at the ends of the leads prewelded to the battery in the factory.
2. Be sure to use it within the specified temperature limits. (100°C)
3. Do not short the battery.
   Do not dispose it in fire.
   Do not try to recharge it.
   Do not mis-connect its polarity (+/−).
   Do not disassemble it.
   Do not expose it to water.
4. Please refer to the schematic diagram and exploded view on the Service Manual when replacing it.

2. SPECIFICATIONS

Amplifier Section

Continuous Average Power Output is 80 watts* per channel, min., at 8 ohms from 20 Hertz to 20,000 Hertz with no more than 0.005% total harmonic distortion.**

Continuous Power Output, from POWER IN (both channels driven)
T.H.D. (20 Hz to 20 kHz, 0.005% 8 ohms) ..... 80 watts per channel
Intermodulation Distortion (50 Hertz : 7,000 Hertz = 4:1, 8 ohms, from POWER IN)
continuous rated power output ..... No more than 0.005%
Damping Factor
1 kHz, 8 ohms 63
20 Hz to 20 kHz, 8 ohms 45
Input (Sensitivity/Impedance)
PHONO MM ..... 2.5 mV/50 kilohms
CD, AUX, VDP, VCR, TAPE, ADAPTOR ..... 150 mV/50 kilohms
POWER INPUT ..... 1V/50 kilohms
Phono Overload Level (T.H.D. 0.03% 1,000 Hz)
PHONO MM ..... 160 mV
Cartridge Load Capacity/Load Resistance
PHONO MM ..... 220 pF/50 kilohms
Output (Level/Impedance)
TAPE REC, ADAPTOR ..... 150 mV/2.2 kilohms
PRE OUT ..... 1V/1.2 kilohms
Channel Separation
PHONO ..... 60 dB/1 kHz
CD, AUX, VDP, VCR, TAPE, ADAPTOR ..... 70 dB/1 kHz
SPEAKER ..... OFF,A,B,A parallel B
Load Impedance ..... 4 ohms to 16 ohms
Frequency Response
PHONO (RIAA Equalization) ..... ±0.3 dB (20 Hz to 20 kHz)
CD, AUX, VDP, VCR, TAPE, ADAPTOR ..... ±1 dB (5 Hz to 100 kHz)
Tone Control
BASS ..... ±8 dB (100 Hz)
TREBLE ..... ±8 dB (10 kHz)
DNR ..... −4 dB (input 150mV/20 kHz)
Loudness Contour (Volume control set at −40 dB)
..... + 7 dB (100 Hz), + 3.5 dB (10 kHz)
Signal-to-Noise Ratio (IHF, short circuited A network)
PHONO MM ..... 83 dB
CD, AUX, VDP, VCR, TAPE, ADAPTOR ..... 96 dB

FM Tuner Section

Frequency range ..... 87.5 MHz to 108 MHz
Usable Sensitivity ..... Mono: 10.8 dBf, (0.95 μV/ 75 ohms)
50 dB Quieting Sensitivity , Mono: 15.7 dBf, (1.6 μV/75 ohms)
Stereo: 37 dBf, (18.5 μV/75 ohms)
Signal-to-Noise Ratio ..... Mono: 80 dB (at 65 dBf)
Stereo: 75 dB (at 86 dBf)
Distortion
Mono ..... 0.1% (100 Hz)
0.1% (1 kHz)
0.25% (6 kHz)
Stereo ..... 0.2% (100 Hz)
0.15% (1 kHz)
0.3% (6 kHz)
Capture Ratio ..... 1 dB
Alternate Channel Selectivity ..... 65 dB (400 kHz)
Stereo Separation ..... 50 dB (1 kHz)
35dB(30Hz to 15kHz)
Frequency Response ..... +1−3 dB (30 Hz to 15 kHz)
Spurious Response Ratio ..... 70 dB
Image Response Ratio ..... 50 dB
IF Response Ratio ..... 110 dB
AM Suppression Ratio ..... 55 dB
Tuning Threshold ..... 29.2dBf (7.9μV/75 ohms)
Antenna Input ..... 300 Ω balanced
75 Ω unbalanced

NOTE:
Specifications and design subject to possible modifications without notice due to improvements.

AM Tuner Section

Frequency Range
..... 530kHz to 1600kHz(KU ,KC and S/G models)
..... 531 kHz to 1602 mHz (only S/G model)
Sensitivity (IHF, Loop antenna) ..... 200 μV/m
Selectivity ..... 40 dB
Signal-to-Noise Ratio ..... 55 dB(at 100 dBμV/m)
Image Response Ratio ..... 66 dB
IF Response Ratio ..... 70 dB
Antenna ..... Loop Antenna

VHF Switch Section

Input/Output Impedance ..... 75 ohms
Frequency Response ..... ±2 dB (54 MHz to 216 MHz)
Crosstalk ..... 60 dB (54 MHz to 216 MHz)
VSWR ..... less than 1.5

Video Section

Input (Sensitivity/Impedance)
VDP/VCR 1, VCR 2, VCR3 , ADAPTOR ..... 1 V p-p/75 ohms
Output (Level/Impedance)
VCR 2, VCR3, ADAPTOR MONITOR TV ..... 1 V p-p/75 ohms
Frequency response ..... ±2 dB (5 Hz to 10 MHz)
Crosstalk ..... 45 dB (3.58 MHz)
Signal-to-Noise Ratio ..... 55 dB

Miscellaneous

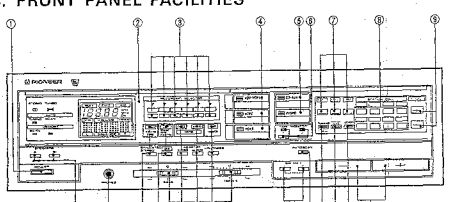
Power Requirements
KU and KC models ..... AC 120 V, 60 Hz
S/G model ..... AC 110/120/220/240 V, 50/60 Hz
Power Consumption
KU, KC and S/G models ..... 360 VA, 290W
Dimensions ..... 420(W) x 120(H) x 302(D) mm
16-9/16(W) x 4-3/4(H) x 11-7/8(D) in
Weight (without package) ..... 8.3 kg (18 lb 5 oz)

Furnished Parts

FM T-type Antenna 1
AM Loop Antenna 1
Operating Instructions 1

**Measured pursuant to the Federal Trade Comission's Trade Regulation rule on Power Output Claims for Amplifiers.*
***Measured by Audio Spectrum Analyzer.*

3. FRONT PANEL FACILITIES



① POWER switch

When this switch is pressed, power is supplied to the unit. To turn power off, press the switch again, to the released position.

② Display panel

For details, see the section "Display Panel Facilities."

③ RECORDING SELECTOR switches/ indicators

Use these switches to select the sources for simulcast recording with a VCR connected to the rear panel VCR3 jacks.

④ VIDEO FUNCTION switches/indicator

VDP/VCR1: Press when performing playback on a video disc player (VDP) or video cassette recorder (VCR).

VCR2: Press when performing playback on a second VCR.

VCR3: Press when performing playback on a third VCR.

⑤ AUDIO FUNCTION switches/indicators

CD/AUX: Press when listening to a stereo component connected to the CD/AUX jacks.

PHONO: Press when playing records on a turntable connected to the PHONO jacks on the rear panel.

⑥ TAPE MONITOR switches/indicators

These switches are used when performing tape playback, and monitoring recording. This receiver has two sets of tape terminals, allowing you to connect two tape decks for both recording and playback.

TAPE 1: Press this switch when playing the tape deck connected to the TAPE 1 jacks.

TAPE 2: Press this switch when playing the tape deck connected to the TAPE 2 jacks.

NOTE:
If TAPE 1 and TAPE 2 are pressed simultaneously, TAPE 2 alone will function.

⑦ Band selector switches

FM 1, FM 2: Press either of these switches for FM reception.

AM: Press this switch for AM reception.

⑧ STATION CALL switches

These are pressed to tune in preset broadcasting stations and to preset the stations.
To tune in a station, first select the appropriate frequency band using the FM 1, FM 2 or AM switches, and then press the desired station number switch.

⑨ TUNING switch

These switches are used to manually scan the frequency range. Press the "+" switch to move to higher frequencies and the "–" switch to move to lower frequencies.

⑩ SPEAKERS switches

These are used to select the speakers through which you wish to listen.

A : To use the speakers connected to the SPEAKERS A terminals.

B : To use the speakers connected to the SPEAKERS B terminals.

⑪ PHONES jack

Connect the plug on your headphones to this jack. To listen to a program through the headphones, set both the SPEAKERS A and B switches to the OFF position.

⑫ SIMULATED STEREO switch/indicator

This turns monaural signals into simulated stereo sound. Use this when you wish to experience the sense of stereo presence with AM broadcasts, VCR or other monaural signal sources.

NOTE:
This function can also be used with stereo sources, but it will result in a different sound from the normal stereo sound.

⑬ DNR* switch/indicator

The DNR system reduces highly audible noise components in the high frequency ranges. When playing back video tapes, if you notice disturbing tape hiss in the high frequency ranges, press this switch and the noise will be reduced. When the switch is pressed, the indicator lights.

NOTE:

- *This switch functions only when the VDP/VCR 1, VCR 2 or VCR 3 switches are pressed.*
  When the CD/AUX or PHONO switches are pressed, the indicator will go out.
- *The effectiveness of the DNR system in reducing high-range noise varies depending on the tape used, recording level, and other conditions.*
- *When selecting the VIDEO FUNCTION switches, the DNR switch can be set to ON. When this switch is set to ON, the AUDIO FUNCTION switches and 8mm selector switches are automatically set to OFF. If one of the VIDEO FUNCTION switches is subsequently selected again, the DNR switch will automatically turn ON once more.*

*The DNR (Dynamic Noise Reduction System) is authorized for use by National Semiconductor Corporation.

⑭ ADAPTOR VIDEO switch/indicator

Press when using the video adaptor component (e.g. video enhancer) connected to the ADAPTOR VIDEO IN/OUT jacks.

⑮ ADAPTOR AUDIO switch/indicator

Press when using the audio adaptor component (e.g. graphic equalizer, RG dynamic processor, etc.) connected to the ADAPTOR AUDIO IN/OUT jacks.

⑯ LOUDNESS switch/indicator

Press when listening to sound at a low volume level. This will enhance the bass and treble and give more life to the sound even at low volume levels.

⑰ BASS/TREBLE controls

These controls are used to adjust the tone quality.

⑱ BALANCE control

Use to control the sound-volume balance between the right and left channels. To readjust the sound balance to the center position, press the "L" and "R" switches simultaneously.

⑲ AUTO SCAN switch

Press this switch to automatically scan the frequency range and press again to cancel the auto scanning mode. In the auto scanning mode, the receiver's internal electronic tuning circuit operates to tune in all available stations one after the other. Each station will be tuned in for about five seconds before the receiver moves to the next station.

NOTE:
When tuning stations with the auto scan mode, whenever the AUTO SCAN switch is pressed to release the receiver from the auto scan mode, the station currently tuned in will be held.

⑳ AUTO/MANUAL TUNING switch

This switch is used to select the tuning mode. Indicators on the display panel show whether the mode selected is AUTO or MANUAL.

AUTO tuning

When the UP or DOWN TUNING switch is pressed, the receiver automatically scans the broadcast station frequencies. When a broadcast is received, the scanning stops at that frequency.

MANUAL tuning

This is the usual tuning method. Each time the UP or DOWN TUNING switch is pressed, the reception frequency will be changed. If pressed continuously, the receiver will scan the broadcast frequencies continuously. When the receiver reaches the upper or lower limit of the possible reception frequencies, the scanning will automatically stop.

㉑ MEMORY SCAN switch

When this switch is pressed, the stations (AM:8 and FM:8 x 2) preset in the STATION CALL switches will be displayed in order.

㉒ MEMORY switch

This switch is used to preset selected broadcasting frequencies (stations) in the STATION CALL switches. When this switch is pressed, the display panel's MEMORY indicator lights, and the tuning frequency flashes on the display. Stations can be preset while the MEMORY indicator is lit.

㉓ VOLUME switches

These switches are for adjusting sound volume. When the "+" switch is pressed, sound volume is increased, and when the "–" switch is pressed, sound volume is reduced. Pressing both switches simultaneously will reduce the volume to a minimum level.
To readjust the volume to the minimum position, press the "+" and "–" switches simultaneously.

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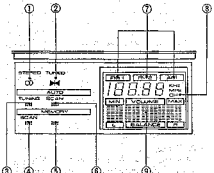
4. DISPLAY PANEL FACILITIES



① STEREO indicator
This lights to indicate that an FM station broadcasting in stereo has been tuned in.

② TUNED indicator
This lights to indicate that an FM or AM station has been tuned in.

③ AUTO TUNING indicator
This indicator lights when the reception mode is set for AUTO TUNING.

④ MEMORY SCAN indicator
Lights when the MEMORY SCAN switch is pressed.

⑤ MEMORY indicator
This indicator lights when the MEMORY switch is pressed.

⑥ AUTO TUNING SCAN indicator
Lights when the AUTO SCAN switch is pressed.

⑦ Band indicators
Light to indicate the band chosen with the Band Selector switch.

⑧ Frequency display
This digital display indicates the frequency to which the receiver is currently tuned.

⑨ VOLUME/BALANCE indicator
Displays the sound volume and right-left balance.

Volume display:

Display when power switch is turned ON:

- When the power switch is set to ON, the sound level indicator will flash. This display shows the sound level before the power was turned ON; during this time, the protective circuit is operating and no sound will be produced. While the indicator is flashing, if you find the level shown is too large, lower the sound volume. If you wish to set the sound volume to the minimum position, press the "+" and "–" switches simultaneously.

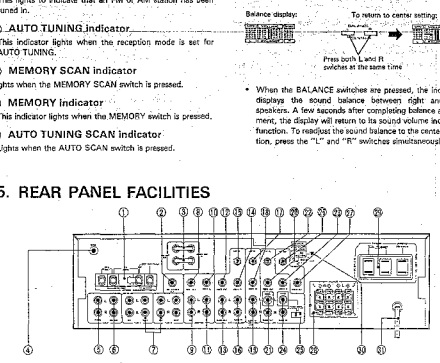
Balance display:

To return to center setting:

Press both L and R switches at the same time

- When the BALANCE switches are pressed, the indicator displays the sound balance between right and left speakers. A few seconds after completing balance adjustment, the display will return to its sound volume indicator function. To readjust the sound balance to the center position, press the "L" and "R" switches simultaneously.

5. REAR PANEL FACILITIES



[TUNER SECTION]

① ANTENNA terminals
These terminals are used for connecting FM and AM antennas.

② AM STEREO OUT jack
Connect to the input terminals of an AM stereo adaptor in order to receive AM stereo broadcasts. For details, consult the Operating Instructions accompanying your AM stereo adaptor.

[AUDIO SECTION]

③ PREAMPLIFIER/POWER AMPLIFIER connector bars
When the connector bars are removed from the jacks, you can separate the receiver's preamplifier and power amplifier. For normal use, however, they are left inserted.

NOTE:
If these bars are not inserted properly, you will not hear any sound from the speakers.

④ GND terminal
Connect the ground lead of the turntable.

⑤ PHONO INPUT jacks
Connect the output cords of a turntable.

⑥ CD/AUX INPUT jacks
Connect to the output jacks of a compact disc player or playback-only tape deck.

⑦ TAPE 1/TAPE 2 jacks
The REC/PLAY jacks on the receiver consist of two sets, TAPE 1 and TAPE 2. It is possible to connect two tape decks to the receiver and do simultaneous recording or tape to tape recording (but only from tape deck 1 to tape deck 2). When connecting only one tape deck to the receiver, connect it to the TAPE 1 jacks.

⑧ ADAPTOR VIDEO OUT jack
Connect to the video input jack of a video adaptor component (e.g. video enhancer, etc.).

⑨ ADAPTOR AUDIO OUT jacks
Connect to the audio input jacks of an audio adaptor component (e.g. graphic equalizer, RG dynamic processor, etc.).

⑩ ADAPTOR VIDEO IN jack
Connect to the video output jacks of a video adaptor component (e.g. video enhancer, personal computer, etc.).

⑪ ADAPTOR AUDIO IN jacks
Connect to the audio output jacks of an audio adaptor component (e.g. graphic equalizer, RG dynamic processor, etc.).

⑫ VCR2 VIDEO OUT jack
When copying program materials from the video component connected to the VDP/VCR 1 jacks, connect to the recording VCR's video input jack.

⑬ VCR2 AUDIO OUTPUT jacks
Connect to the audio input jacks of a recording VCR when copying, from a component connected to the VDP/VCR 1 jacks.

⑭ VCR2 VIDEO INPUT jack
When playing back the video image from a VCR used for copying, connect its video output jack.

⑮ VCR2 VHF/INPUT jack
When playing back a second VCR and watching with a TV set, connect this jack to the VCR's VHF OUTPUT jack.

⑯ VCR2 AUDIO INPUT jacks
When playing back the audio channel from a VCR used for copying, connect its audio output jacks.

⑰ VDP/VCR1 VHF INPUT jack
When playing back a VDP or VCR and watching with a TV set, connect this jack to the VHF OUTPUT jack of the VDP or VCR.

⑱ VDP/VCR 1 VIDEO INPUT jack
When playing back a VDP or VCR, connect this jack to the component's video output jack.

⑲ VDP/VCR1 AUDIO INPUT jacks
Connect to the audio output jacks of a video component such as a VCR or VDP (video disc player).

⑳ VCR3 VIDEO OUTPUT jack
Connect to the video input jack of a copy VCR when using the recording selector to perform copying of programs from a video component connected to the VDP/VCR1 jack or VCR2 jack.

㉑ VCR3 AUDIO OUTPUT jacks
When using the recording selector and connecting a VCR for copying, connect these jacks to the audio input jacks of the VCR used for copying.

NOTE:
When connecting a stereo component, be sure to connect the left and right channels correctly. If a monaural component is used, connect only to the L (MONO) jack.

㉒ VCR3 VHF INPUT jack
Connect to the VHF output jack of a VCR used for simulcast recording.

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㉒ VCR3 VIDEO INPUT jack

Connect to the video output jack of a VCR used for simulcast recording.

㉓ VCR3 AUDIO INPUT terminals

Connect to the audio input terminals of a VCR used for simulcast recording.

NOTE:
When connecting a stereo video component, be sure to connect the left and right channels correctly. When connecting a monaural video component, always connect to the "L" (MONO) side.

㉔ MONO/STEREO selector switch

Set in accordance with the type of VCR connected to the VCR 3 jacks.

MONO: When a monaural VCR is connected (connect the audio pin-plug to the L channel only).
STEREO When a stereo VCR is connected.

㉕ TV SET VHF OUTPUT jack

Connect to the VHF input jack of a TV set in order to watch the playback from VCR, VDP or TV broadcast.

㉖ MONITOR TV VIDEO OUTPUT jack

Connect to the video input jack of a monitor television.

㉗ SPEAKERS terminals

A: Connect to a first set of speakers.

B: Connect to a second set of speakers.

㉘ AC OUTLETS

(SWITCHED)
Power supplied through these outlets is turned on and off by the receiver's POWER switch. Total electrical power consumption of connected equipment should not exceed 100 W.

(UNSWITCHED)
Power flows continually to this outlet, regardless of whether the receiver's POWER switch is ON or OFF. Electrical power consumption of the connected equipment should not exceed 200 W.
The equipment should be disconnected by removing the mains plug from the wall socket when not in regular use, e.g. when on vacation.

NOTE:
Do not connect appliances with high power consumption, such as heaters, iions, or television sets, to the AC OUTLETS, in order to avoid overheating or fire risk.
This can cause the receiver to malfunction.

㉙ SPEAKER IMPEDANCE switch

This switch is for adjusting the amplifier according to the impedance rating of the speaker system being connected. The switch is adjusted according to speaker impedance as shown below.

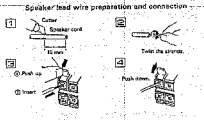
Speaker Impedance Rating	1A, B1 (When using only one pr., A or B)	1A+B1 (When using both A and B)
At least 4 Ω and less than 8 Ω	Position②	
At least 8 Ω, less than 16 Ω	position①	Position ②
16 Ω	position①	Position ①

㉚ Power cord

Preparing and connecting the speaker cords

1. Cut off the covering of the speaker cords as shown in the figure.
2. Twist the strands with your thumb and forefinger, otherwise some of the strands may come into contact with other terminals and cords, causing a short circuit.
3. Push up the minus lever of the speaker terminals with your finger and insert the minus speaker lead into the hole.
4. The lead is locked into position when the lever is pushed down. Check that the lead is connected firmly.
   In the same way, connect the plus speaker lead to the plus terminal.
   Check that the wires of the speaker cords are not projecting from the terminals. If they should project and come into contact with each other, a short circuit will be caused.

Speaker lead wire preparation and connection



6. DISASSEMBLY

■ Removal of bonnet case

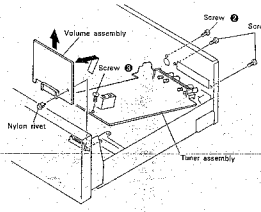
1. Remove the bonnet case by removing 5 screws on the rear panel side of bonnet case.

■ Removal of tuner assembly

1. Remove 2 antenna terminal screws ❶ on the rear panel side, an AM STEREO OUT screw ❷ and a tuner assembly screw ❸.
2. Remove the tuner assembly by pulling it up as tilting the volume assembly to the front panel side.

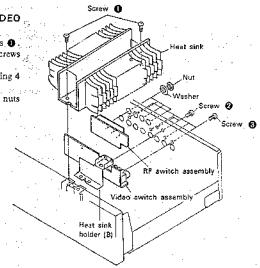
■ Removal of volume assembly

1. Remove the tuner assembly.
2. Remove the nylon rivet of volume assembly and pull up the volume assembly.



■ Removal of RF switch assembly and VIDEO switch assembly

1. Remove the heat sink by loosing 4 securing screws ❶.
2. Remove the heat sink holder B by removing 2 screws ❷ on the rear panel side of it.
3. Remove the VIDEO switch assembly by removing 4 screws ❸ on the rear panel side of it.
4. Remove the RF switch assembly by removing 4 nuts and 4 washers on the rear panel side of it.



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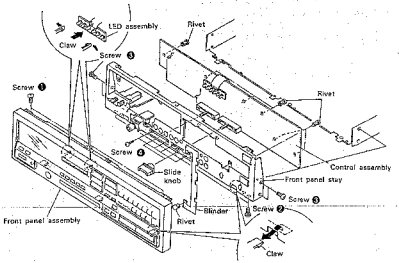
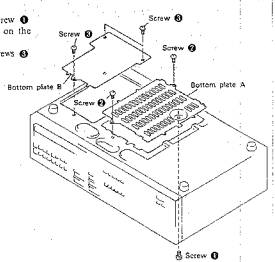
■ Removal of control assembly

1. Remove 3 screws ❶ on the upper side of front panel assembly.
2. Remove the front panel assembly and panel stay by removing 3 screws ❷ on the lower side and 4 screws ❸ on both sides of the panel stay.
3. Remove the front panel assembly from the panel stay by removing 3 claws on the lower side of the front panel assembly.
4. Remove the LED assembly by removing 2 claws of the assembly.
5. Remove 7 rivets of the panel stay from the rear panel side of it.
6. Remove 2 slide knobs by removing a rivet of the blinder.
7. Remove the control assembly from the panel stay by removing ❹ screws 4 of the tone volume.



■ Removal of bottom plate

1. Remove the bottom plate A by removing a screw ❶ on the AF assembly side and 2 screws ❷ on the chassis side.
2. Remove the bottom plate B by removing 3 screws ❸ on the chassis side.



7. PARTS LOCATION

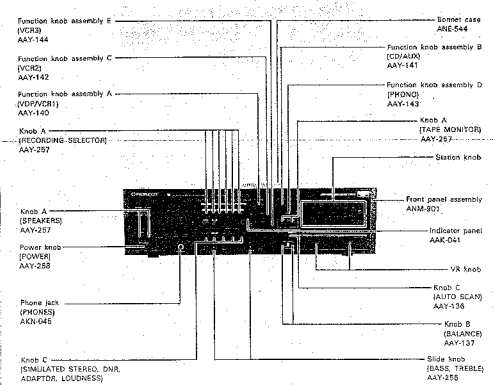
NOTES:

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*

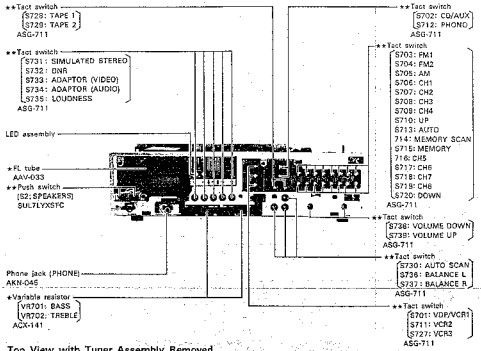
★★ GENERALLY MOVES FASTER THAN ★

This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

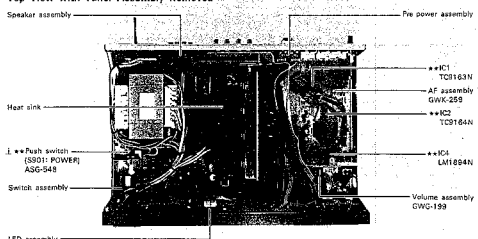
Front Panel View


Function knob assembly E (VCR3) AAY-144
Function knob assembly C (VCR2) AAY-142
Function knob assembly A (VDP/VCR1) AAY-140
Knob A (RECORDING SELECTOR) AAY-257
Knob A (SPEAKERS) AAY-257
Power knob (POWER) AAY-258
Phone jack (PHONES) AKN-045
Knob C (SIMULATED STEREO, DNR, ADAPTOR, LOUDNESS) AAY-136
Bonnet case ANE-544
Function knob assembly B (CD/AUX) AAY-141
Function knob assembly D (PHONO) AAY-143
Knob A (TAPE MONITOR) AAY-257
Station knob
Front panel assembly ANM-901
Indicator panel AAK-041
VR knob
Knob C (AUTO SCAN) AAY-136
Knob B (BALANCE) AAY-137
Slide knob (BASS, TREBLE) AAY-256

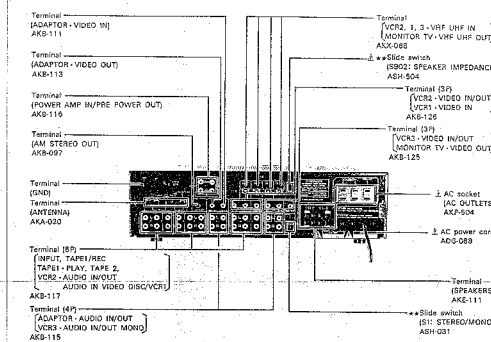
Front View with Front Panel Removed



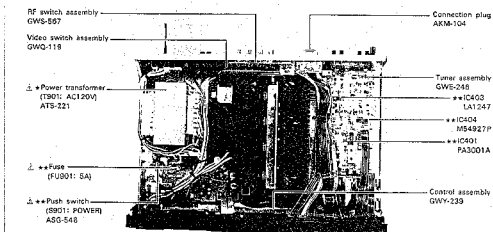
Top View with Tuner Assembly Removed



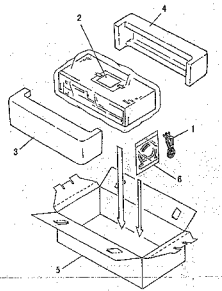
Rear Panel View



Top View



8. PACKING



Mark	No.	Part No.	Description
	1	ADH-005	FM antenna
	2	ARB-571	Operating instructions (English)
	3	AHA-398	Front pad
	4	AHA-399	Rear pad
	5	AHE-504	Packing case
	6	ATB-102	L901 Loop antenna assembly

9. EXPLODED VIEW

NOTES:
- *Parts without part number cannot be supplied.*
- *The △ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
- ★★ *GENERALLY MOVES FASTER THAN* ★
This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

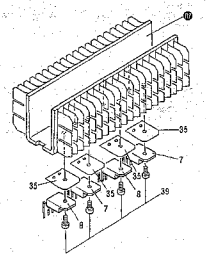
Parts List

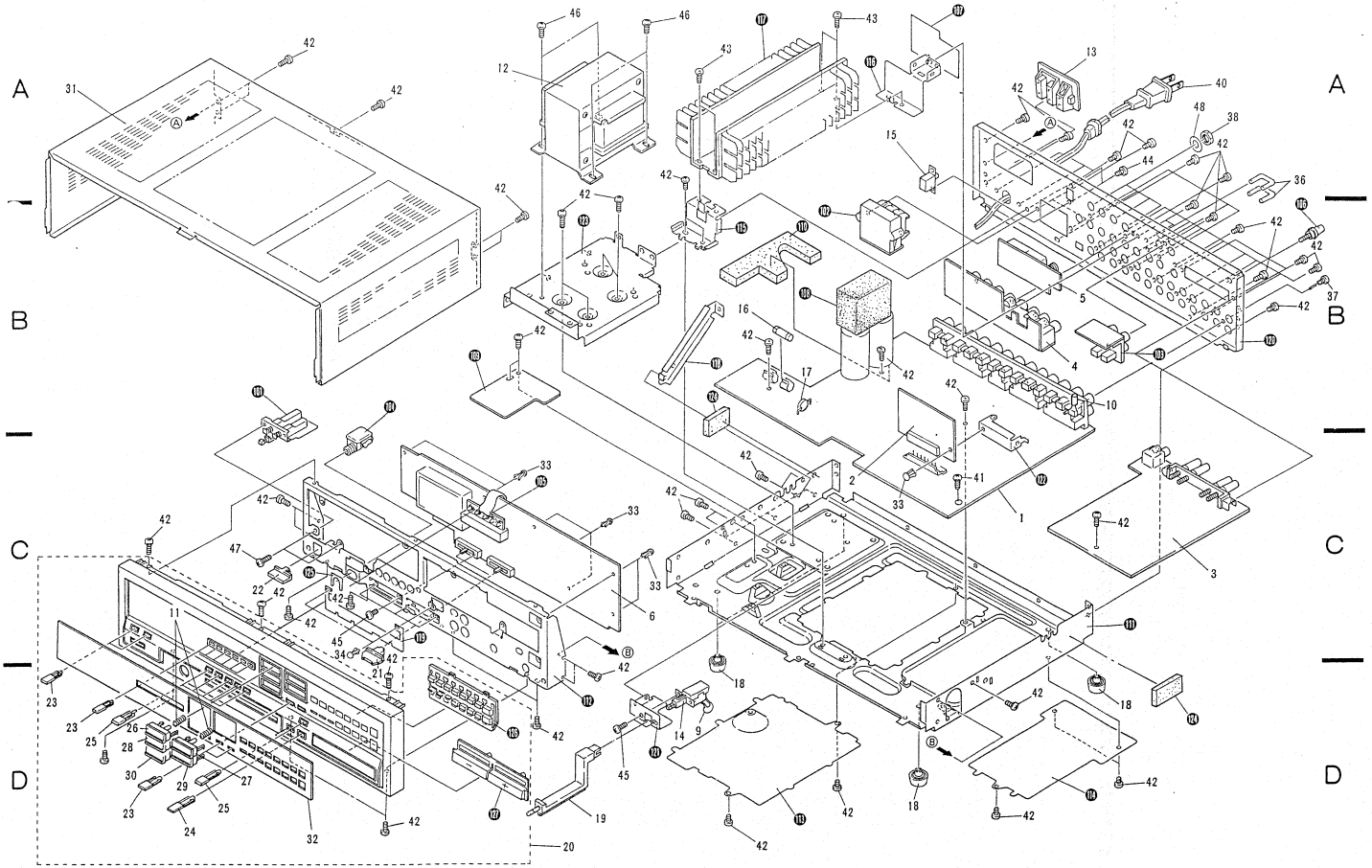
Mark	No.	Part No.	Description
	1	GWK-259	AF assembly
	2	GWG-199	Volume assembly
	3	GWE-246	Tuner assembly
	4	GWQ-119	Video switch assembly
	5	GWS-557	RF switch assembly
	8	GWY-239	Control assembly
△ ★★	7	2SA1386	Q901, Q903
△ ★★	8	2SC3519	Q902, Q904
△	9	ACG-001	C901 Capacitor (0.01/AC250V)
	10	CEA100M50L	C902 Electrical capacitor
	11	ABH-118	Coil spring
△ ★	12	ATS-221	T901 Power transformer (AC120V)
△	13	AKP-504	AC socket (AC OUTLETS)
△ ★★	14	ASG-548	S901 Push switch (POWER)
△ ★★	15	ASH-904	S902 Slide switch (SPEAKER IMPEDANCE)
△ ★★	16	AEK-308	FU901 Fuse (5A)
△	17	AEX-008	Battery (Lithium) ※
	18	AEP-007	Leg assembly
	19	ANZ-023	SW joint
	20	ANM-501	Front panel assembly
	21	AAY-256	Slide knob (BASS, TREBLE)
	22	AAY-268	Power knob (POWER)
	23	AAY-257	Knob A (SPEAKERS, RECORDING SELECTOR, TAPE MONITOR)
	24	AAY-137	Knob B (BALANCE)
	25	AAY-136	Knob C (SIMULATED STEREO, DNR, ADAPTOR, LOUDNESS, AUTO SCAN)
	26	AAY-140	Function knob assembly A (VDP/VCR1)
	27	AAY-141	Function knob assembly B (CD/AUX)
	28	AAY-142	Function knob assembly C (VCR2)
	29	AAY-143	Function knob assembly D (PHONO)
	30	AAY-144	Function knob assembly E (VCR3)
	31	ANE-544	Bonnet case
	32	AAX-041	Indicator panel
	33	AEC-441	Plastic rivet
	34	AEC-471	Nylon rivet
	35	AEC-813	Mica sheet
	36	AKM-104	Connection plug
	37	ABA-176	Screw
	38	ABN-087	Nut
	39	ABA-258	Screw
△	40	ADG-088	AC Power cord
	41	BST30P080FMC	Screw (3x8)
	42	BBZ30P060FZK	Screw (3x6)
	43	BBZ30P100FZK	Screw (3x10)
	44	BMZ30P080FZB	Screw (3x8)
	45	FMZ20P030FMC	Screw (2x3)
	46	WBZ40P080FMC	Screw (4x8)
	47	WMZ30P060FMC	Screw (3x6)
	48	WAXOF160K100	Washer

※ See page 2

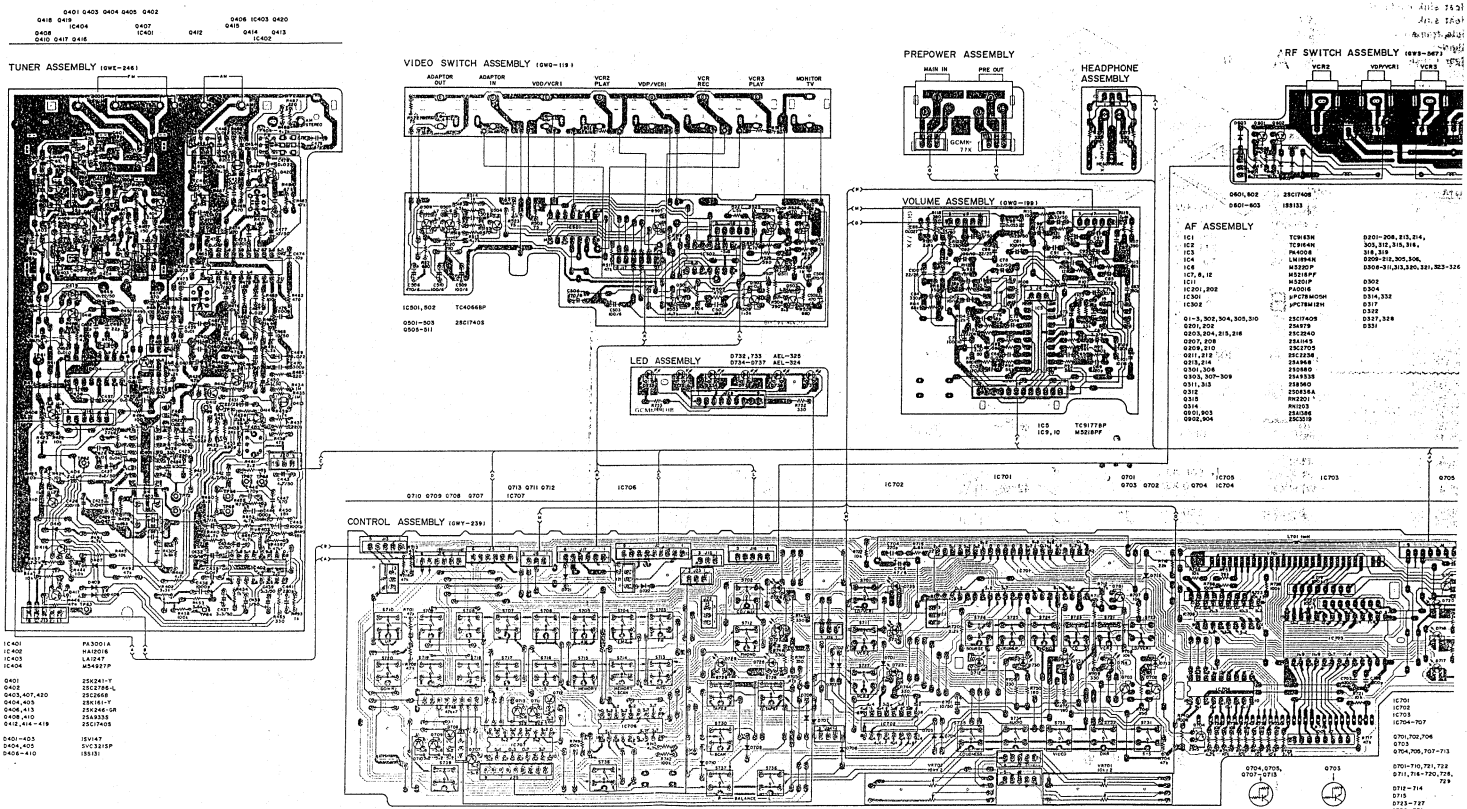
Mark	No.	Part No.	Description
	101		Switch assembly
	102		Speaker assembly
	103		Pre power assembly
	104		Headphone assembly
	105		LED assembly
	106		GND terminal
	107		Barrier sheet A
	108		Cushion
	109		Barrier sheet B
	110		Cushion
	111		Chassis
	112		Panel stay
	113		Bottom plate (A)
	114		Bottom plate (B)
	115		Heat sink holder(A)
	116		Heat sink holder (B)
	117		Heat sink
	118		Side frame
	119		Binder
	120		Rear panel
	121		SW holder
	122		PCB holder
	123		Transformer frame
	124		Cushion rubber
	125		Mounting plate
	126		Station knob
	127		VR knob

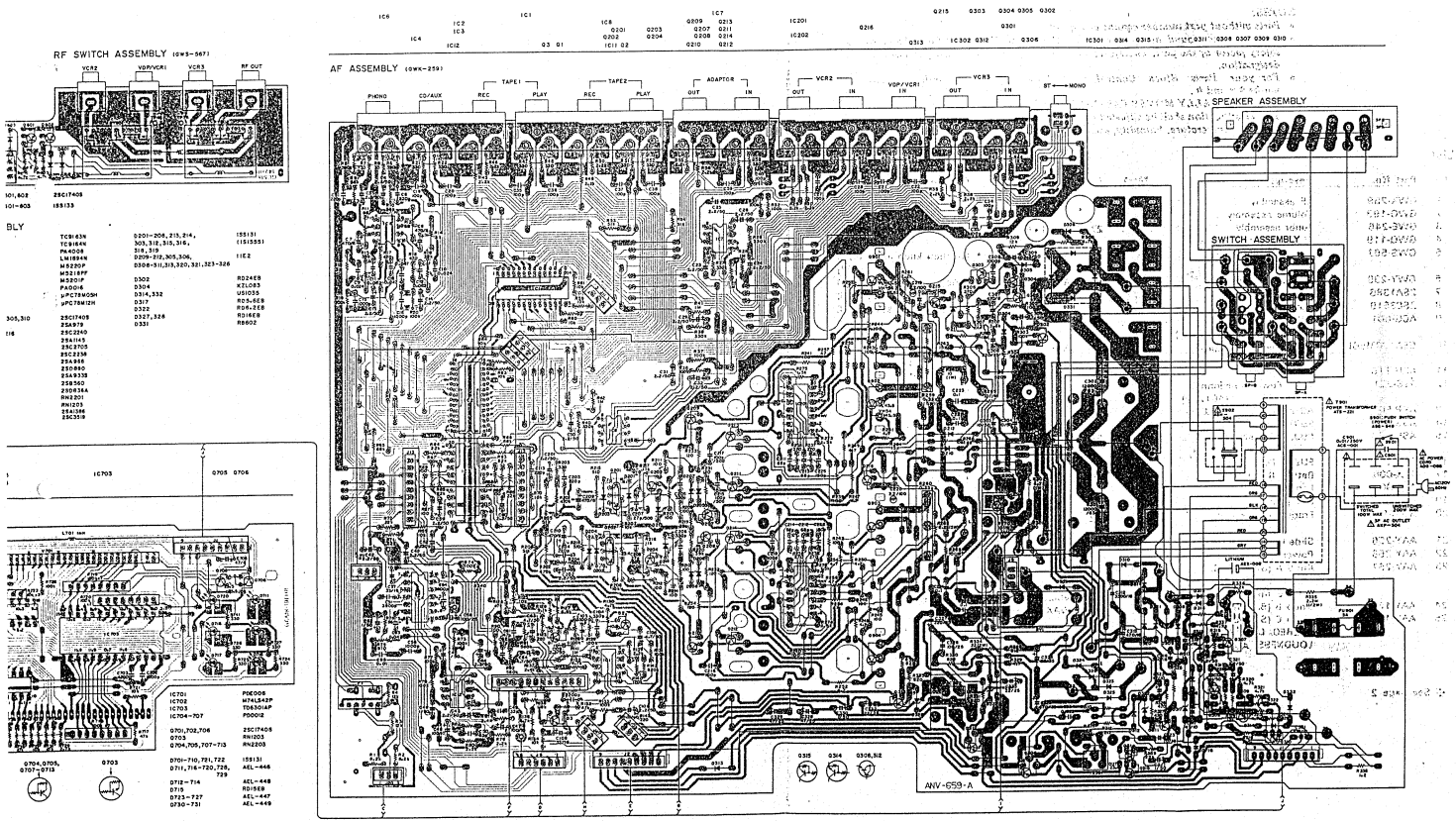
Exploded view of heat sink




1
2
3
4
5
6
A
B
C
D

10. P.C. BOARDS CONNECTION DIAGRAM

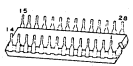



RF SWITCH ASSEMBLY (GWS-567)
VCR2
VDP/VCR1
VCR3
RF OUT
AF ASSEMBLY (GWK-259)
PHONO
CD/AUX
TAPE1
REC
PLAY
TAPE2
ADAPTOR
OUT
IN
VCR2
VDP/VCR1
VCR3
ST ⟶ MONO
SPEAKER ASSEMBLY
SWITCH ASSEMBLY
ANV-659-A

External Apperance of Transistors and ICs

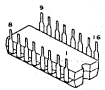
M5220P
M5218PF

TC9163N
TC9164N



LM1894N
PA0016

HA12016
PA3001A



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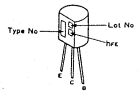
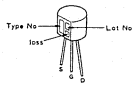
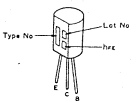
2SC2705



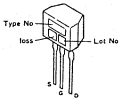
2SK246-GR



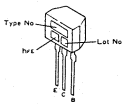
2SB560



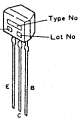
2SK161-Y
2SK241-Y



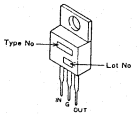
2SC1740S
2SA933S
2SC2668



2SC2786-L



μPC78M05H
μPC78M12H



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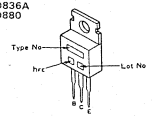
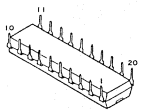
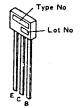
2SC2238
2SD836A
2SD880



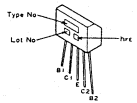
LA1247



RN2201



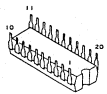
2SA979



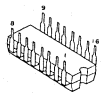
M5201P

TC4066BP

PA4008



M54927P



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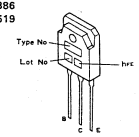
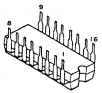
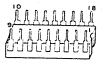
2SC3519



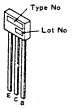
M74LS42P



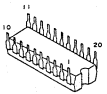
PD0012



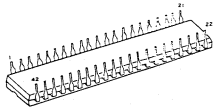
RN1203
RN2203



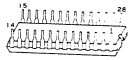
TC9177P



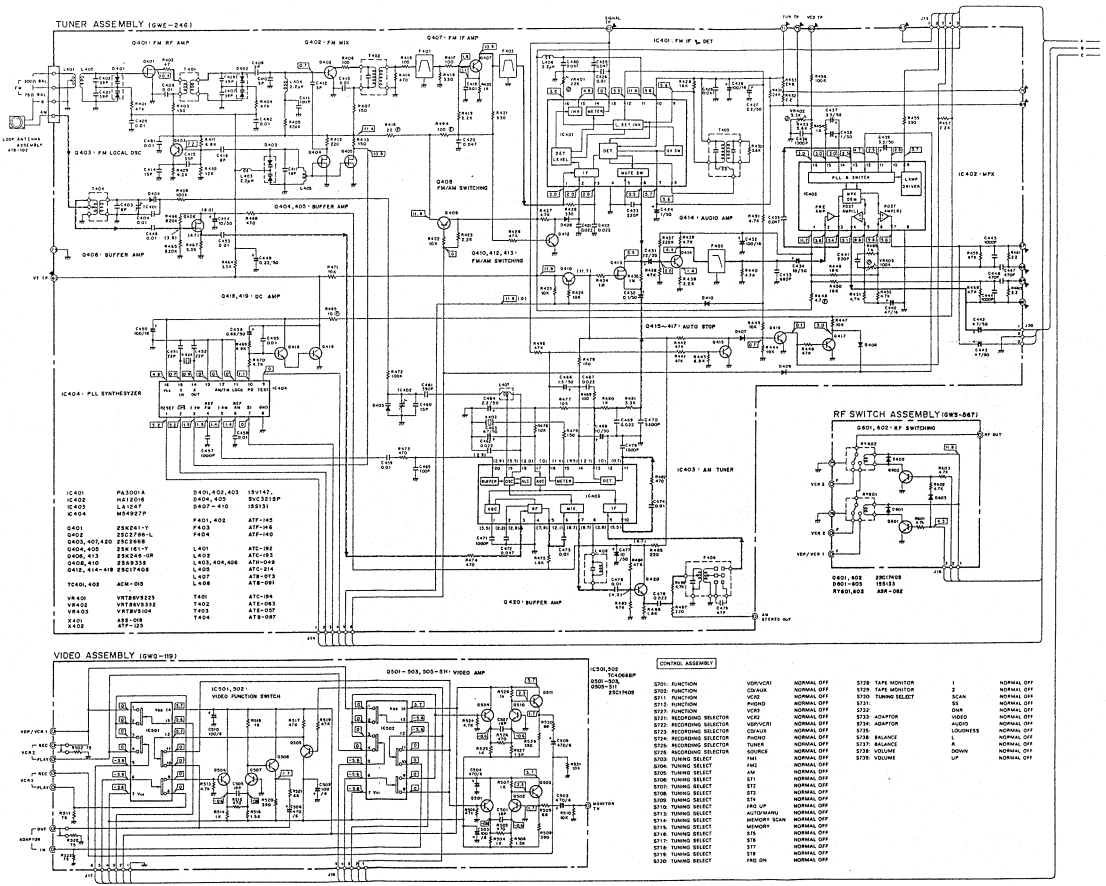
PDE006



TD6301AP



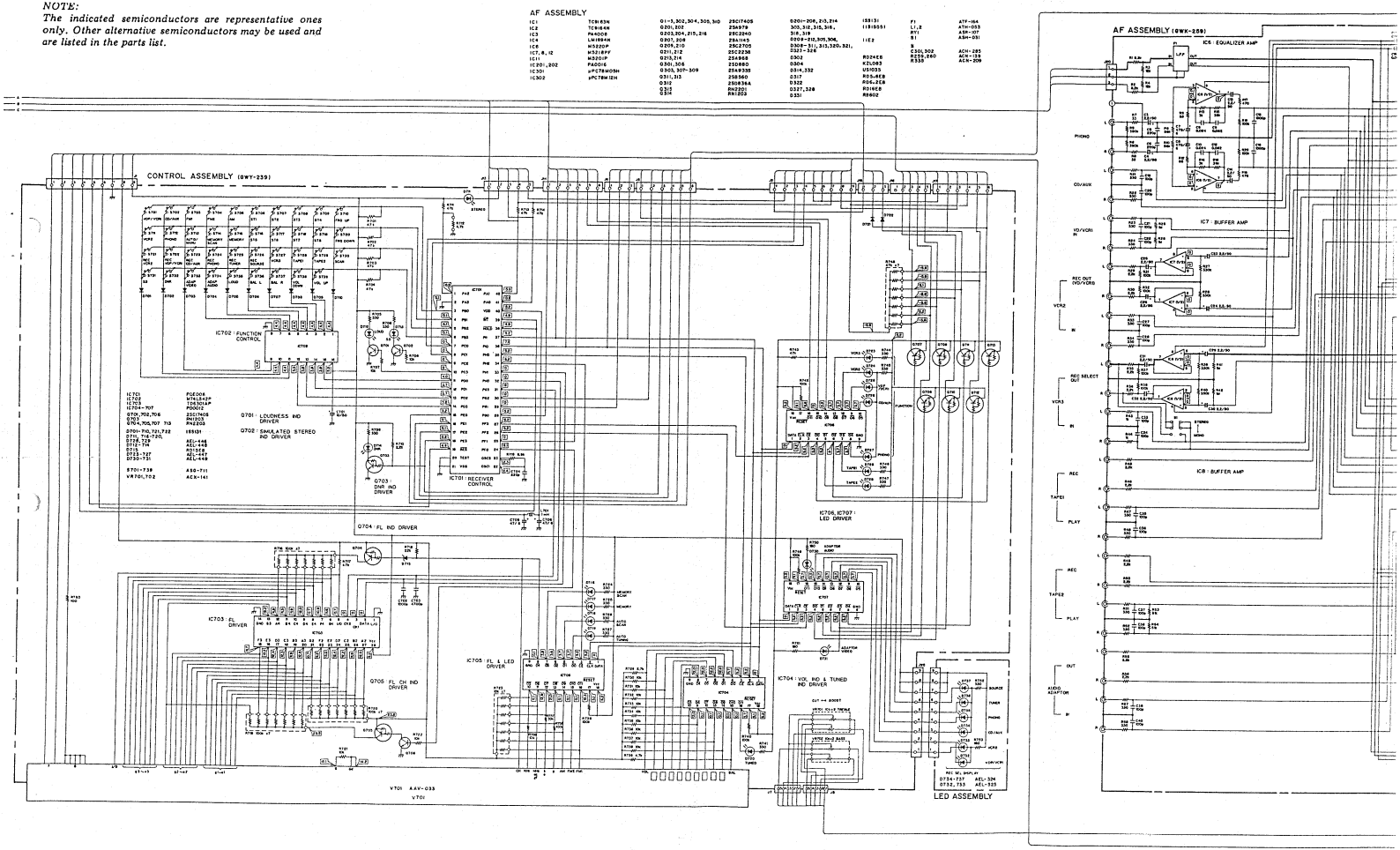
11. SCHEMATIC DIAGRAM

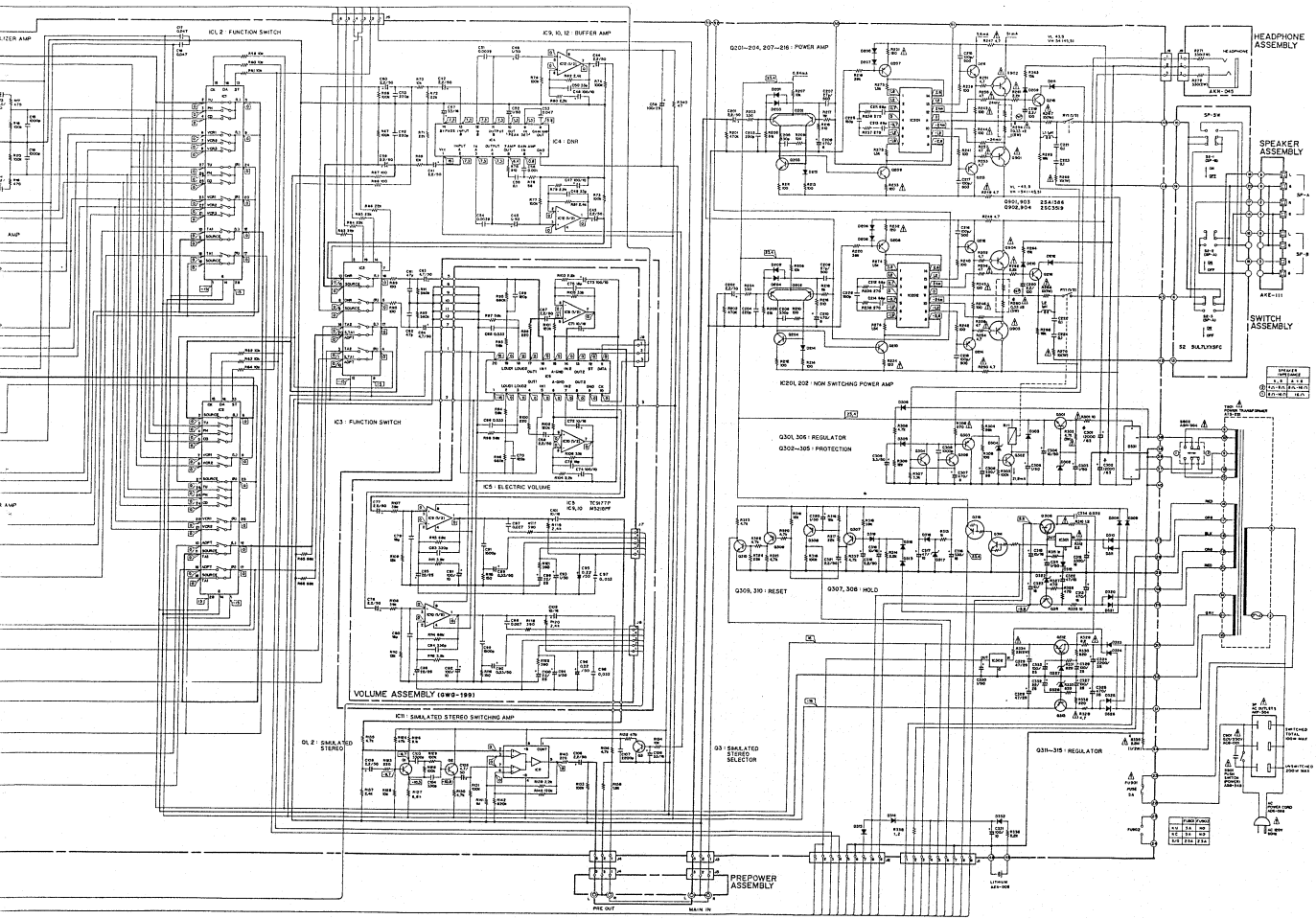

TUNER ASSEMBLY (GWE-246)
VIDEO ASSEMBLY (GWG-119)
RF SWITCH ASSEMBLY (GWS-067)
CONTROL ASSEMBLY
IC401 : FM IF & DET
IC402 : MPX
IC403 : AM TUNER
IC404 : PLL SYNTHESYZER
Q401 FM RF AMP
Q402 FM MIX
Q403 FM LOCAL OSC
Q404,405 BUFFER AMP
Q406 BUFFER AMP
Q407 FM IF AMP
Q408 FM/AM SWITCHING
Q410,412,413 FM/AM SWITCHING
Q414 AUDIO AMP
Q415~417 AUTO STOP
Q418,419 DC AMP
Q420 BUFFER AMP
Q501~503, 505~511 VIDEO AMP
IC501, 502 VIDEO FUNCTION SWITCH
Q601, 602 RF SWITCHING
1. RESISTORS
2. CAPACITORS
3. VOLTAGE, CURRENT
4. OTHERS
5. SWITCHES
OUTSIDE OF P.C. BOARDS
S501: POWER ON—OFF
S502: SPEAKER IMPEDANCE CHANGE
SP A or B 8Ω ~ 16Ω A(1) ~ B(1)
A and B 16Ω B(1) ~ 16Ω
The underlined indicates the switch position.
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.

AF ASSEMBLY

IC1	TC9163N	Q1~5,302,304,305,310	2SC1409	D201~205,213,214	IS131	F1	ATF-064
IC2	TC9164N	D201,202	2SK879	303,312,313,316,	I IS1551	X1,2	ATH-033
IC3	PA4008	D203,204,215,216	2SC2240	318,319	I IE2	S11	ASH-107
IC4	LA4189M	D207,208	2SA1145	D209~212,305,306,		S11	ASH-091
IC5	M5220P	D209,210	2SC2705	D308~311,315,320,321,		S	
IC7,8,12	M5218FV	D211,212	2SC2236	D323~326	Q 2SD1,302	R259,260	ACH-285
IC11	M5201P	D213,214	2SA968	D303	R259,260	R330	ACH-126
IC201,202	PA4004	Q301,308	2SD880	D304	R330		ACH-209
IC301	μPC78M05H	Q303,307~309	2SA933S	D314,332			
IC302	μPC78M12H	Q311,313	2SB560	D317			
		Q312	2SB536A	D322			
		Q314	2SD201	D327,328			
			RN1202	D331			
				RD10ES			
				KZL083			
				USV03			
				MDS-REB			
				MDS-REB			
				RD16ES			
				RB802			




IC1, 2 : FUNCTION SWITCH
IC9, 10, 12 : BUFFER AMP
IC4 : DNR
IC3 : FUNCTION SWITCH
IC5 : ELECTRIC VOLUME
IC5, 10 : SC9177 M5218FP
VOLUME ASSEMBLY (SWG-1991)
IC11 : SIMULATED STEREO SWITCHING AMP
Q1, 2 : SIMULATED STEREO
Q3 : SIMULATED STEREO SELECTOR
Q201~204, 207~216 : POWER AMP
IC201, 202 : NON SWITCHING POWER AMP
Q301, 306 : REGULATOR
Q302~305 : PROTECTION
Q309, 310 : RESET
Q307, 308 : HOLD
Q311~315 : REGULATOR
HEADPHONE ASSEMBLY
SPEAKER ASSEMBLY
SWITCH ASSEMBLY
PREPOWER ASSEMBLY
PRE OUT
MAIN IN

12. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	56 x 10¹	561	RD¼PS 561 J
47kΩ	47 x 10³	473	RD¼PS 473 J
0.5Ω	0R5		RN1H 0R5 K
1Ω	010		RS1P 010 K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	562 x 10¹	5621	RN¼SR 5621 F

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*

★★ GENERALLY MOVES FASTER THAN ★

This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Miscellaneous Parts

P.C.B BOARD ASSEMBLY

Mark	Symbol & Description	Part No.
	AF assembly	GWK-259
	Volume assembly	GWG-199
	Tuner assembly	GWS-246
	Video switch assembly	GWG-119
	RF switch assembly	GWG-567
	Control assembly	GWY-239
	Switch assembly	Non supply
	Speaker assembly	Non supply
	Pre power assembly	Non supply
	Headphone assembly	Non supply
	LED assembly	Non supply

SEMICONDUCTORS

Mark		Symbol & Description	Part No.
⚠	**	Q901, Q903	2SA1386
⚠	**	Q902, Q904	2SC3519

* Mfr of 901—904 should have the same value

SWITCHES

Mark		Symbol & Description	Part No.
⚠	**	S901 Push switch (POWER)	ASG-648
⚠	**	S902 Slide switch (SPEAKER IMPEDANCE)	ASH-504

COIL AND TRANSFORMER

Mark		Symbol & Description	Part No.
⚠	*	T901 Power transformer (AC120V)	ATS-221

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C901 Ceramic (0.01/AC250V)	ACG-001
	C902 Electrical capacitor (10/50V)	CEA100M50L

OTHERS

Mark		Symbol & Description	Part No.
⚠		AC socket (AC OUTLETS)	AKP-504
⚠	**	FU901 Fuse (5A)	AEK-308
⚠		AC Power cord	ADG-088
⚠		Battery (Lithium)	AEX-008 ※

※ See page 2

AF Assembly (GWK-259)

SEMICONDUCTORS

Mark		Symbol & Description	Part No.
	**	IC4	LM1894N
	**	IC11	MS301P
	**	IC7, IC8, IC12	MS218PF
	**	IC6	MS220P
	**	IC201, IC202	PA0016
	**	IC3	PA4008
	**	IC1	TC9163N
	**	IC2	TC9164N
	**	IC301	μPC78M05H
	**	IC302	μPC78M12H
	*	D204	KZL083
	*	D331	RB602
	*	D327, D328	RD15EB
	*	D302	RD24EB
	*	D317	RD5.6EB
	*	D322	RD6.2EB
	*	D314, D332	US1035
	*	D201—D208, D213, D214, D303, D312, D315, D316, D318, D319	1SS131 (US1035) (1S1555)
	*	D306, D309	11E2
	*	D209—D212, D305, D306, D310, D311, D313, D320, D321, D323—D326	11E2
	**	Q315	RN2201
	**	Q207, Q208	2SA1145
	**	Q303, Q307—Q309	2SA933S

Mark	Symbol & Description	Part No.
**	Q214	2N1203
**	Q213, Q214	2SA968
**	Q201, Q202	2SA979
**	Q311, Q313	2SB560
**	Q1—Q3, Q302, Q304, Q305, Q310,	2SC1740S
**	Q211, Q212	2SC2238
**	Q203, Q204, Q215, Q216	2SC2240
**	Q209, Q210	2SC3705
**	Q312	2SD838A
**	Q301, Q306	2SD880

SWITCHE AND RELAY

Mark	Symbol & Description	Part No.
**	S1 Slide switch (STEREO/MONO)	ASH-031
**	RY1 Relay	ASR-107

COILS AND TRANSFORMER

Mark	Symbol & Description	Part No.
	F1 Low-pass filter	ATF-164
	L1, L2 AF Choke coil	ATH-053

CAPACITORS

Mark	Symbol & Description	Part No.
	C301, C302 (12000pF/63V)	ACH-285
	C19—C22, C27, C28, C33—C40	CCCSL101J50
	C215—C218	CCCSL101K500
	C225, C226	CCCSL151J50
	C5, C6, C112, C113, C203, C204	CCCSL221J50
	C207, C208	CCCSL270K500
	C49, C50	CCCSL330J50
	C61, C62	CCCSL470J50
	C211—C214	CCCSL680J50
	C3, C4	CEANL2R2M50
	C219, C220	CEANP2R2M100
	C224	CEAS222M35
	C45, C46, C52, C305, C311, C320, C330	CEA010M50L
	C315, C318, C323	CEA100M16L
	C58	CEAS101M25
	C303, 304	CEA100M50L
	C47, C48, C331	CEA101M10L
	C326, C333	CEA101M25L
	C13, C14, C23—C26, C29—C32, C41—C44, C59, C60, C106, C108, C201, C202, C319, C321	CEA2R2M50L
	C332	CEA220M25L
	C306, C327	CEA221M25L
	C309	CEA3R3M50L
	C57, C108	CEA330M16L
	C318	CEA331M16L

Mark	Symbol & Description	Part No.
	C212	CEA332M16L
	C53, C54, C105	CEA487M50L
	C317, C322	CEA470M10L
	C228, C329	CEA470M25L
	C313	CEA471M16L
	C325	CEA471M35L
	C7, C8, C209, C210, C307	CEA471M6L
	C308	CKCYB102K50
	C104, C205, C206	CKCYB331K50
	C17, C18	CKCYF473Z50
	C334	CKCYY223M25
	C15, C16, C56	COMA102J50
	C55, C221—C224	COMA104J50
	C107	COMA222J50
	C9, C10	COMA243J50
	C103	COMA332J50
	C51, C54	COMA392J50
	C53	COMA473J50
	C11, C12	COMA823J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
△	R259, R260 (0.33Ω×2 5W)	ACN-139
△	R335 (2.2 MΩ1/2W)	ACN-209
△	R310	RD1/4PMF1R2J
△	R239—R246	RD1/4PMF101J
△	R312	RD1/4PMF2R2J
△	R267—R270	RS1PMF100J
△	R302	RS1PMF472J
△	R334	RS2PMF220J
	R251, 252	RD1/4PMF222J
	R255—258	RD1/4PMF470J
△	R231—R234, R301, R325, R306, R247—R250, R328, R329	RFA1/4PS□□□J
	R65, R66, R207, R208, R215—R218, R251—R254, R263—R266, R273—R276, R308, R309, R313, R314, R327, R330, R331, R338 R340	RD1/4PM□□□J
	Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (4P) (ADAPTOR - AUDIO IN/OUT, VCR3 - AUDIO IN/OUT)	AKB-115
	Terminal (6P) (INPUT, TAPE1/REC TAPE1 - PLAY, TAPE2 VCR2 - AUDIO IN/OUT, AUDIO IN VIDEO DISC/VCR1)	AKB-117
	Transistor socket	AKH-017

Mark	Symbol & Description	Part No.
	Screw (3×6)	PBZ30P060FMC
	Screw (3×16) (PHONO - CD/AUX1, VCR2 - AUDIO IN/OUT, TAPE1/REC - PLAY, VIDEO DISC/VCR1, TAPE2/REC - PLAY)	VBZ30P160FMC

Volume Assembly (GWG-199)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
**	IC9, IC10	MS218PF
**	IC5	TC9177F

CAPACITORS

Mark	Symbol & Description	Part No.
	C75, C76, C79, C80	CCCSL180J50
	C85, C86	CEAS223M50L
	C89, C90	CEAR33M50L
	C93, C94	CEA010M50L
	C71, C72, C101, C102	CEA100M16L
	C73, C74, C81, C82	CEA101M10L
	C87, C88, C77, C78	CEA2R2M50L
	C85, C86, C99, C100	CEA220M25L
	C93, C94	CKCY933K50
	C91, C92	COMA182J50
	C97, C98	COMA273J50
	C65, C66, C97, C98	COMA333J50
	C69, C70	CCCSL121J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Socket (12P)	AKP-047

Switch Assembly

SWITCH

Mark	Symbol & Description	Part No.
**	S2 Push switch (SPEAKERS)	SUL7LYXSFC

Speaker Assembly

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (SPEAKERS)	AKE-111

Prepower Assembly

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (4P) (POWER AMP IN/ PREAMP OUT)	AKB-118

Headphone Assembly

RESISTORS

Mark	Symbol & Description	Part No.
	R271, R272	RS2LMF331J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (PHONES)	AKN-045

Tuner Assembly (GWE-246)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
**	IC402	HA12016
**	IC403	LA1247
**	IC404	MS4927P
**	IC401	PA3001A
*	Q404, Q405	SVC321SP
*	Q406—Q410	1SS131
*	Q401—Q403	1SV147
**	Q408, Q410	2SA933S
**	Q412, Q414—Q419	2SC1740S
**	Q403, Q407, Q420	2SC2858
**	Q402	2SC2786-L
**	Q404, Q405	2SK161-Y
**	Q401	2SK241-Y
**	Q408, Q413	2SK246-GR

COILS, FILTERS AND TRANSFORMERS

Mark	Symbol & Description	Part No.
	L407 AM OSC coil	ATB-073
	T404 AM antenna transformer	ATB-087
	L408 AM DET coil	ATB-091
	L401 FM antenna coil	ATC-192
	L402 FM antenna coil	ATC-193
	T401 FM RF transformer	ATC-194
	L405 FM OSC coil	ATC-214
	T403 FM DET transformer	ATE-057
	T402 FM coupling transformer	ATE-063
	F404 AM ceramic filter	ATF-140
	F401, F402 FM ceramic filter	ATF-145
	F403 Beat eliminate filter	ATF-146
	L403, L404, L406 Inductor	ATH-049

CAPACITORS

Mark	Symbol & Description	Part No.
	TC401, TC402 Trimmer	ACM-015
	C465	CCCSL101J50
	C423, C441	CCCSL221J50
	C479	CCCSL470J50
	C416	CCDCH080D50
	C414	CCDCH150J50
	C451, C452	CCDCH220J50
	C415	CCDCH330J50
	C401, C402, C407, C408	CCDRH390J50
	C409	CCDSL020C50
	C412, C418	CCDSL030C50
	C410	CCDSL050C50
	C411	CCDSL101J50
	C403	CCDTH080D50
	C480	CCDTH150J50

Mark	Symbol & Description	Part No.
	C417	CCDTH1R0J50
	C449	CEAR22M50L
	C456	CEAR68M50L
	C428, C432, C450	CEA5101M16
	C430	CEAOR1M50L
	C424, C438	CEAD10M50L
	C466	CEA1R5M50L
	C434, C454, C468, C477	CEA100M50L
	C427, C464	CEA2R2M50L
	C431	CEA220M25L
	C437, C439	CEA3R3M50L
	C442, C443, C483	CEA4R7M50L
	C440	CEA470M16L
	C457, C471, C476	CKCY81CX500
	C470	CKCY8332K50
	C433	CKCY8681K50
	C421, C422, C462, C467, C469, C478	CKCY7223Z50
	C420, C426, C429, C435, C472	CKCYX473M25
	C404—C406, C413, C419, C426, C448, C453, C455, C458, C459, C473—C475, C481, C482	CKDYF103Z50
	C480	CKDYF473Z50
	C444, C445	CQMA102J50
	C446, C447	CQMA471J50
	C436	CQSA102J50
	C451	CQSA391J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
*	VR403 Semi-fixed (100 kΩ)	VR7B6VS104
*	VR401 Semi-fixed (22 kΩ)	VR7B6VS223
*	VR402 Semi-fixed (3.3 kΩ)	VR7B6VS332
	R418, R494, R495, R446	RD1/4PMF□□□J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (ANTENNA)	AXA-026
	Terminal (AM STEREO OUT)	AKB-097
	X401 Crystal resonator	ASS-018
	X402 Ceramic resonator	ATF-125

Video Switch Assembly (GWQ-119)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
**	IC501, IC502	TC4066BP
**	Q501—Q503, Q505—Q511	2SC1740S

CAPACITORS

Mark	Symbol & Description	Part No.
	C501, C505, C507	CCDSL1R0J50
	C502, C506, C508, C504	CEA5471M6
	C503, C509, C510	CEJA101M6

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R508, R520, R528	RD1/4PM391J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (1P) (ADAPTOR - VIDEO OUT)	AKB-113
	Terminal (1P) (ADAPTOR - VIDEO IN)	AKB-111
	Terminal (3P) [VCR2 - VIDEO IN/OUT, VCR1 - VIDEO IN]	AKB-126
	Terminal (3P) [VCR3 - VIDEO IN/OUT, MONITOR TV - VIDEO OUT]	AKB-125

RF Switch Assembly (GWS-567)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
*	D601—D603	1SS131
**	Q601, Q602	2SC1740S

SWITCH AND RELAYS

Mark	Symbol & Description	Part No.
**	RY601, RY602, Relay	ASR-082

RESISTORS

Mark	Symbol & Description	Part No.
	R601, R602, R603	RD1/8PM472J

OTHERS

Mark	Symbol & Description	Part No.
	Connector socket (VHF, IN/OUT)	AKX-068

Control Assembly (GWY-239)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
*	D711, D718—D720, D728, D729 LED	AEL-446
*	D723—D727 LED	AEL-447
*	D712—D714 LED	AEL-448
*	D730, D731 LED	AEL-449
**	IC702	M74L542P
**	IC701	PDE006
**	IC704—IC707	PD0012
**	IC703	TD62501AP
*	D715	RD15EB
*	D701—D710, D721, D722	1SS131
**	Q703	RN1203
**	Q704, Q705, Q707—Q713	RN2203
**	Q701, Q702, Q706	2SC1740S

SWITCHES

Mark	Symbol & Description	Part No.
**	S701—S739 Tact switch	ASG-711

CAPACITORS

Mark	Symbol & Description	Part No.
	C704	CCSL221J50
	C701	CSJA100M50
	C705, C706	CEJA470M6
	C702	CKCYE102K50
	C703	CKCY8472K50

COIL, FILTER AND TRANSFORMERS

Mark	Symbol & Description	Part No.
	L701 Inductor	ATH-098

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
*	VR701, VR702 Slide Variable resistor	ACX-141
	R723 Resistor array	RA7S103J
	R716, R715, R720 Resistor array	RA7S104J
	R748 Resistor array	RA7S473J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
*	V701 FL tube	AAV-023

LED Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
*	D734, D735—D737 LED	AEL-324
*	D732, D733 LED	AEL-452

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

SX-V500(BK)

13. ADJUSTMENTS

FM Tuner Section

- Connect the FM signal generator (FM SG) to the FM ANTENNA 300Ω terminal through a 300Ω dummy antenna.
- Set the AUTO/MANUAL switch to the MANUAL position and the FUNCTION switch to the FM.

Step	FM SG (1 kHz±75 kHz dev.)		Frequency display	Adjustment point	Adjustment procedure
	Frequency	Level			
1	No signal		87.5 MHz	—	Check pin 61 (3.4±1.5V) of tuner assembly.
2			108.0 MHz		Check pin 61 ($8.7^{+2.5}_{-2.0}$V) of tuner assembly.
3	98 MHz	20~30 dB	98 MHz	T401, L402 T402	Set the output from pin 62 of tuner assembly to maximum level.
4	98 MHz	60 dB	98 MHz	T603 (Primary side)	Adjust voltage across pins 71 and 72 of tuner assembly to T meter center. (±10 mV)
5	98 MHz	60 dB	98 MHz	T403 (Secondary side)	Minimize distortion.
6	Repeat steps 4 and 5 until both specification ratings are satisfied.				
7	98 MHz	60 dB	98 MHz	VR402	Adjust the frequency at pin 64 of tuner assembly to 76.0 kHz (±100 Hz)
	No modulation				
8	98 MHz	60 dB	98 MHz	T402	Minimize distortion in both left and right channel outputs (adjust T402 to within ±30°)
	Stereo modulation*				
9	98 MHz	60 dB	98 MHz	VR403	Maximize separation.
	Stereo modulation*				
10	98 MHz	24 dB	98 MHz	VR401	At first turn it fully clockwise then turn it gradually counterclockwise, and stop it at the point whereby STEREO IND is lit.

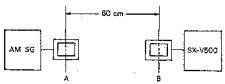
* Stereo modulation: Main 1 kHz L+R ±68.25 kHz dev. Pilot 19 kHz±8.75 kHz dev.

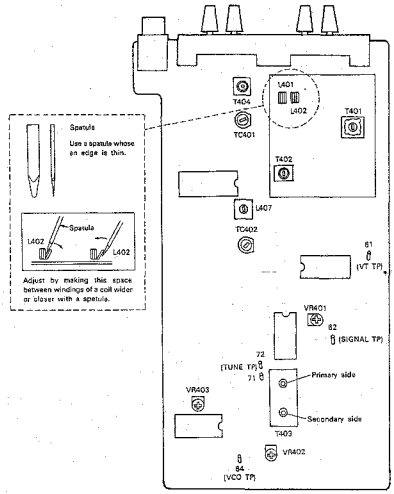
AM (MW) Tuner Section

- Connect loop antenna to the AM signal generator (AM SG), and connect the Loop antenna (of the set) to AM ANTENNA terminal.
- Set the FUNCTION switch to the AM (MW).

Step	AM SG (400Hz, 30% MOD)		Frequency display	Adjustment pint	Adjustment procedure
	Frequency	Level			
1	No signal		530 kHz	L407	Set pin 61 of tuner assembly to 1.2V (±0.05V)
2			1600 kHz	TC402	Set pin 61 tuner assembly to 10.0V (±0.1V)
3	Repeat steps 1 and 2 until both specification ratings are satisfied.				
4	600 kHz	60 dB	600 kHz	T404	Set the output from pin 62 of tuner assembly to maximum level.
5	1400 kHz	60 dB	1400 kHz	TC401	
6	Repeat steps 4 and 5 until both specification ratings are satisfied.				
7	Be sure to confirm the TUNING IND is lit.				

- The distance between AM SG side loop antenna A and the receiver side (SX-V500) loop antenna B, that is, from the center of A side loop antenna to that of B side loop antenna should be 60 cm.





SX-V500(BK)

13. RÉGLAGE

SYNTONISATEUR MF

- Connecter le générateur de signal MF (FM SG) à la borne 300 ohm de l'ANTENNE MF via l'antenne factice ohm.
- Régler le commutateur AUTO/MANUAL sur MANUAL et le commutateur FUNCTION sur MF

Etape	FM SG (1 kHz±75 kHz dev.)		Affichage de fréquence	Point de réglage	Procédé de réglage
	Fréquence	Niveau			
1	Aucun signal		87,5 MHz	—	Vérifier la fiche 61 (3,4±1,5 V) de l'ensemble tuner
2			108,0 MHz		Vérifier la fiche 61 ($8{,}7\ ^{+2{,}8}_{-2{,}5}$ V) de l'ensemble tuner
3	98 MHz	20~30 dB	98 MHz	T401, L402 T402	Régler la sortie de la fiche 62 de l'ens. tuner au niveau max.
4	98 MHz	60 dB	98 MHz	T403 (Côté primaire)	Régler le voltage des fiches 71 à 72 de l'ens. tuner au center 'f' du compteur.
5	98 MHz	60 dB	98 MHz	T403 (Côté secondaire)	Minimiser la distorsion.
6	Répéter les étapes 4 et 5 jusqu' à la satisfaction des deux spécifications.				
7	98 MHz Aucune modulation	80 dB	98 MHz	VR402	Régler la fréquence de la fiche 64 de l'ens. tuner à 76,0 kHz (±100 Hz)
8	98 MHz Modulation stéréo*	60 dB	98 MHz	T402	Réduire la distortion dans des deux canaux droit et gauche (régler T402 à±90°)
9	98 MHz Modulation stéréo*	60 dB	98 MHz	VR403	Maximaliser la séparation.
10	98 MHz	24 dB	98 MHz	VR401	Le tourner d'abord à fond dans le sens horaire, puis graduellement en sens inverse, et s'arrêter au point où STEREO IND s'allume.

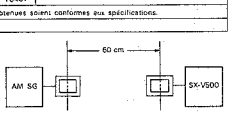
* Modulation stéréo: Principal 1 kHz L+R ±68,25 kHz dev. Pilote 19 kHz ±6,75kHz dev.

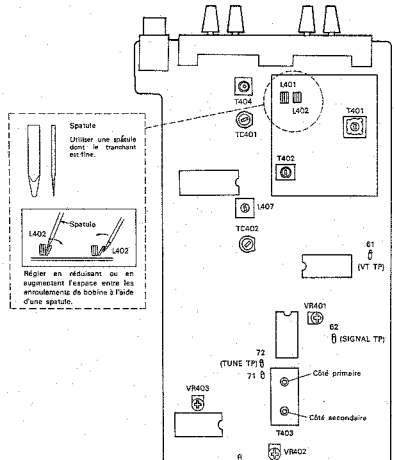
SYNTONISATEUR MA/OM

- Connecter l'antenne bouclée au générateur de signal MA (AM SG) et l'ANTENNE BOUCLEE (réglage) à la borne de l' ANTENNE MA.
- Régler le commutateur FUNCTION sur MA/OM.

Etape	AM SG (400 Hz, 30% MOD)		Affichage de fréquence	Point de réglage	Procédé de réglage
	Fréquence	Niveau			
1	Aucun signal		530 kHz	L407	Régler la fiche 61 de l'ens. tuner à 1,2V (±0,05V)
2			1600 kHz	TC402	Régler la fiche 61 de l'ens. tuner à 10,0V (±0,1V)
3	Répéter les étapes 1 & 2 jusqu'à ce que les valeurs obtenues soient conformes aux spécifications				
4	600 kHz	60 dB	600 kHz	T404	Régler la sortie de la fiche 62 de l'ens. tuner au niveau maximal.
5	1400 kHz	60 dB	1400 kHz	TC401	
6	Répéter les étapes 4 et 5 jusqu'à ce que les valeurs obtenues soient conformes aux spécifications.				
7	S'assurer que le TUNING IND est allumé.				

- La distance entre l'antenne-cadre A côté AM SG et l'antenne-cadre B côté récepteur (SX-V500), c'est-à-dire du centre de l'antenne-cadre côté A à celui de l'antenne-cadre côté B devrait être de 60 cm.





SX-V500(BK)

13. AJUSTE

Sección del sintonizador de FM

- Conecte el generador de señal de FM (FM SG) a la terminal de la ANTENA de 300 a través de la antena ficticia de 300.
- Fije el interruptor AUTO/MANUAL a la posición MANUAL y el interruptor de FUNCTION a FM.

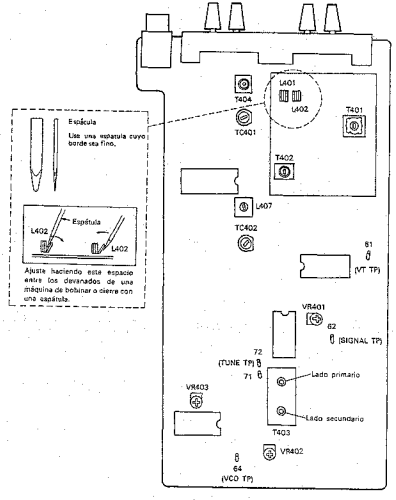
Paso	FM SG (1 kHz±75 kHz dev.) Frecuencia	Nivel	Indicación de frecuencia	Punto de ajuste	Procedimiento de ajuste
1	Sin señal		87,5 MHz	—	Patilla de inspección 61 (3,4±1,5Ω) de conjunto del sintonizador
2			108,0 MHz		Patilla de inspección 61 (0,7 $^{+2,5}_{-0,0}$ V) del montaje del sintonizador
3	98 MHz	20~30 dB	98 MHz	T401, L402 T402	Fije la salida de la patilla 62 del montaje del sintonizador a su máximo nivel.
4	98 MHz	60 dB	98 MHz	T403 (Lado primario)	Adjuste el voltaje a través de la patilla 71 y 72 del montaje del sintonizador al centro del medidor T.
5	98 MHz	60 dB	98 MHz	T403 (Lado secundario)	Distorsión minimizada.
6	* Repita los pasos 4 y 5 hasta que sean satisfechos ambos valores nominales de las especificaciones.				
7	98 MHz Sin modulación	60 dB	98 MHz	VR402	Adjuste la frecuencia en la patilla 64 del montaje del sintonizador a 76,0 kHz (±100 Hz)
8	98 MHz Modulación estereo *	60 dB	98 MHz	VR402	Minimice la distorción en la salida del canal derecho y la del izquierdo (ajuste T402 dentro de ±90°)
9	98 MHz Modulación estereo *	60 dB	98 MHz	VR403	Separación maximizada.
10	98 MHz	24 dB	98 MHz	VR401	Primero gírelo completamente en el sentido de las manecillas del reloj, luego gírelo gradualmente en contra del sentido de las manecillas del reloj, y detengalo en el punto donde se enciende STEREO IND.

* Modulación estereo: Principal 1 kHz D+I±68,25 kHz Piloto desv. 19 kHz±8,75kHz desv.

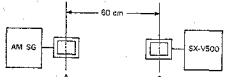
Sección del sintonizador de AM/MW

- Conecte la antena de cuadro al generador de señal de AM (AM SG), y conecte la ANTENA de cuadro (del aparato) a la terminal de la ANTENA de AM.
- Fije el interruptor de FUNCTION a la posición de AM (MW).

Paso	AM SG (400 Hz, 30% MOD) Frecuencia	Nivel	Indicación de frecuencia	Punto de ajuste	Procedimiento de ajuste
1	Sin señal		530 kHz	L407	Fije la patilla 61 del montaje del sintonizador a 1,2V (±0,05V)
2			1600 kHz	TC402	Fije la patilla 61 del montaje del sintonizador a 10,0V (±0,1V)
3	Repita los pasos 1 y 2 hasta las dos clasificaciones especificadas sean satisfechas.				
4	600 kHz	60 dB	600 kHz	T404	Fije la salida de la patilla 62 del montaje del sintonizador al máximo nivel.
5	1400 kHz	60 dB	1400 kHz	TC401	
6	Repita los pasos 4 y 5 hasta que las dos clasificaciones especificada sean satisfechas.				
7	Cerciórese de confirmar que el IND TUNING este encendido.				



- La distancia entre la antena de cuadro A del lado AM SG y la antena de cuadro B del lado del receptor (SX-V500), es decir, desde el centro de la antena de cuadro A al centro de la B, debe ser de 60 cm.



PIONEER

Service Manual

CIRCUIT DESCRIPTIONS

ORDER NO.
ARP-894-0

AUDIO/VIDEO STEREO RECEIVER

SX-V500(BK)

- This service manual refers to the circuit descriptions only.
- For the repair and adjustments, please see service manual (ARP-862) of SX-V500(BK).

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1. CIRCUIT DESCRIPTIONS 2
2. BLOCK DIAGRAM 3
3. OPERATION DIAGRAM 5
4. IC DATA 20

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1. CIRCUIT DESCRIPTIONS

■ TUNER SECTION

FM signal is output to the function IC (TC9163N) of the PRE-AMP section from the triple standard front end, narrow band ceramic filter, FM IF and DET IC (PA3001A) and after it is being passed through beat eliminate filter, MPX IC (HA12016) and the LPF.

AM signal which comes from a large loop antenna and FET buffer amplifier is passed through the AM TUNER IC (LA1247) to output the beat eliminate filter, MPX IC (HA12016). For AM, a AM STEREO OUT terminal is provided.

■ AUDIO SECTION

• PRE-AMP section

The individual inputs and outputs are selected by FUNCTION IC (TC9163N and PA4008). RECORDING SELECTOR IC (TC9164N) and output to ELECTRONIC VOLUME IC (TC9177P). At this point, DYNAMIC NOISE REDUCTION circuit is operated to reduce noise level with DNR SW is turned ON during the FUNCTION modes are in VCR1, VCR2, and VCR3. By varying the volume sound ranging from −78 dB to 0 dB every 2 dB step with the ELECTRONIC VOLUME IC and it is output to the PRE-OUT after being passed through the tone volume. The simulated stereo circuit is incorporated only to the Lch, in order to make artificial stereo sound only for the Lch against monaural input signal by its delaying phase.

• Power AMP section

The input signal from the POWER AMP-IN terminal goes to Darlington connecting pure complementary push-pull circuit to drive speaker with high power of 80W + 80W after it is being passed through the transistor differential amplifier first stage, current mirror, emitter follower, constant current loading pre-drive, and non-switching AMP IC (PA0016).

■ RECEIVER CONTROL SECTION

Function, recording selection, volumes and pre-set are controlled by RECEIVER CONTROL IC (PDE006) with one touch control, and in addition to that fluorescent tube, individual LEDs, RF switch and VIDEO switch, etc. are also controlled by this IC.

■ POWER SECTION

During A + B speakers driving (8Ω to 16Ω) and parallel A and B driving (4Ω to 8Ω), the output stage of the power amplifier is stabilized by switching the power transformer secondary coil to low voltage with the speaker impedance changeover switch.

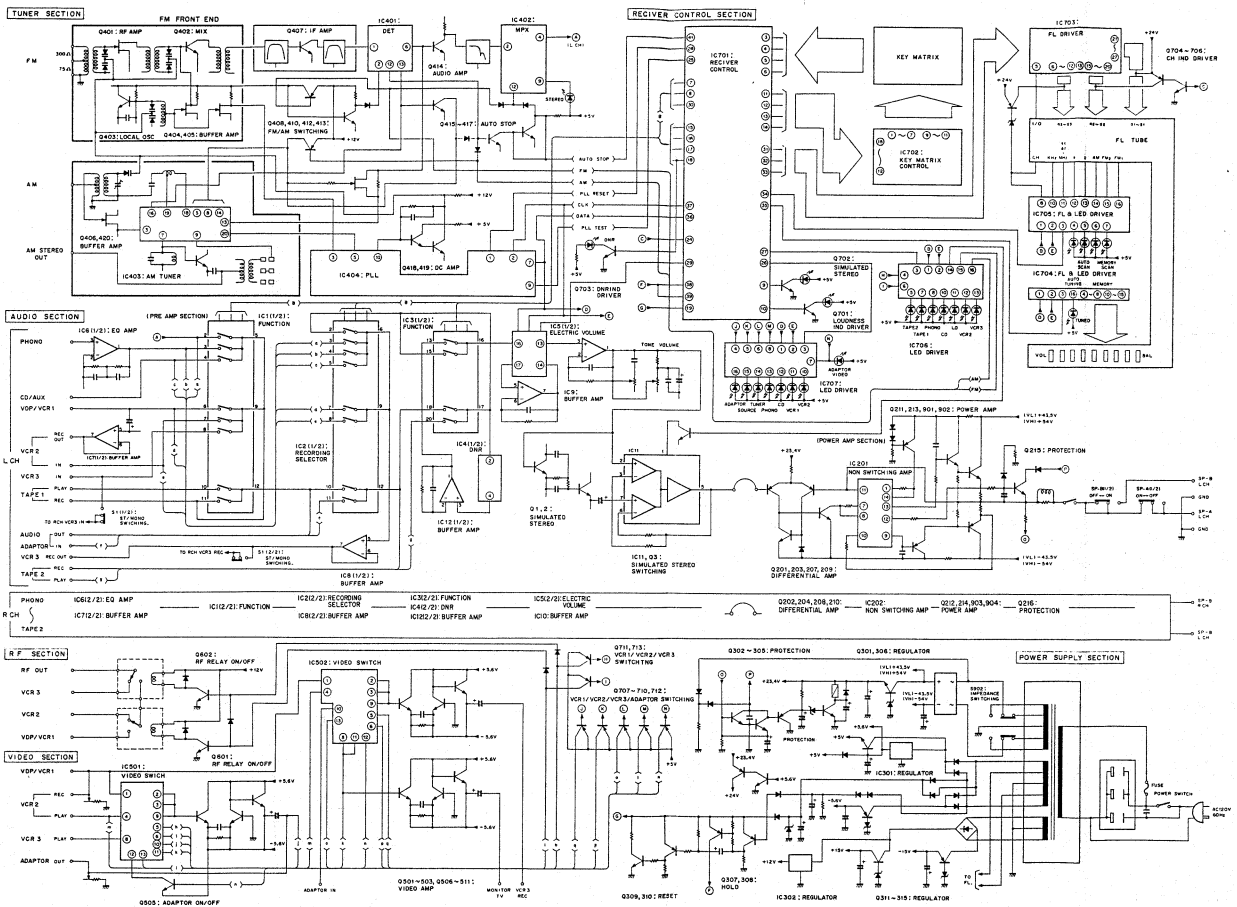
■ RF SECTION

Switching of VDP/VCR1, VCR2 and VCR3 is respectively made by using the high frequency relay.

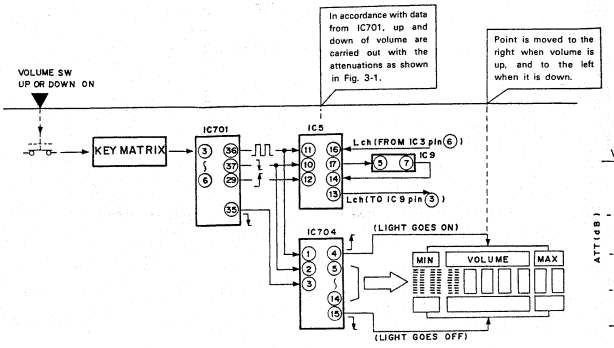
■ VIDEO SECTION

Switching of VDP/VCR1, VCR2, VCR3,and adaptor is made by using the CMOS VIDEO SWITCH (TC9066BP), and the individual outputs of the ADAPTOR OUT, VCR3 REC, and MONITOR TV are obtained through the VIDEO AMP.

2. BLOCK DIAGRAM



• VOLUME UP or DOWN


In accordance with data from IC701, up and down of volume are carried out with the attenuations as shown in Fig. 3-1.
Point is moved to the right when volume is up, and to the left when it is down.
VOLUME SW UP OR DOWN ON
KEY MATRIX
IC701
IC5
Lch (FROM IC 3 pin 6)
IC9
Lch (TO IC 9 pin 3)
IC704
(LIGHT GOES ON)
MIN
VOLUME
MAX
(LIGHT GOES OFF)

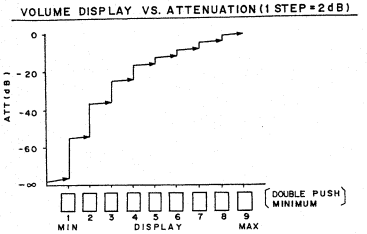
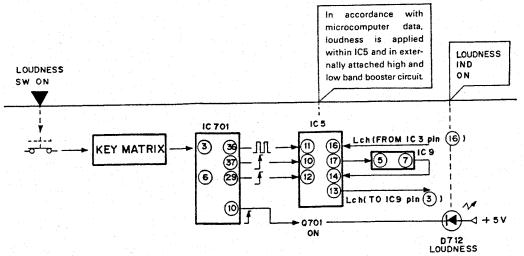


Fig. 3-1 Volume display VS. attenuation

• LOUDNESS



• **BALANCE**

a. When Blance SW Lch only is pressed.

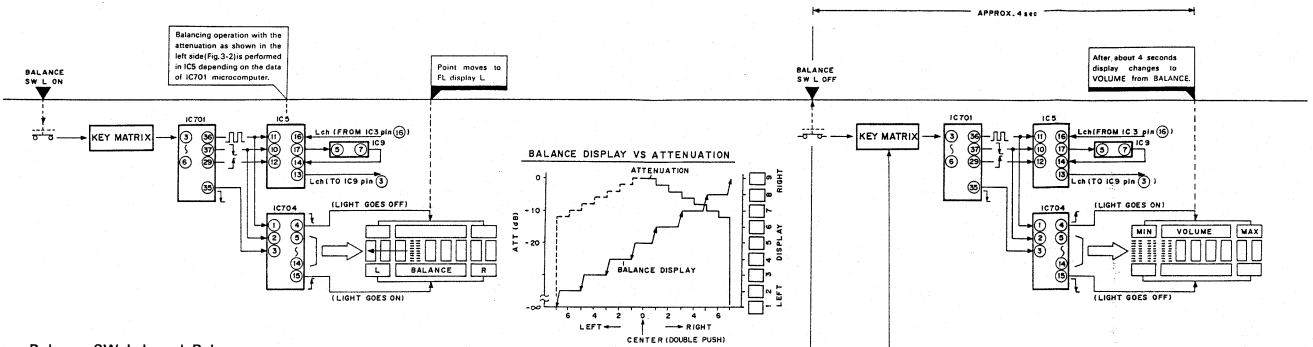
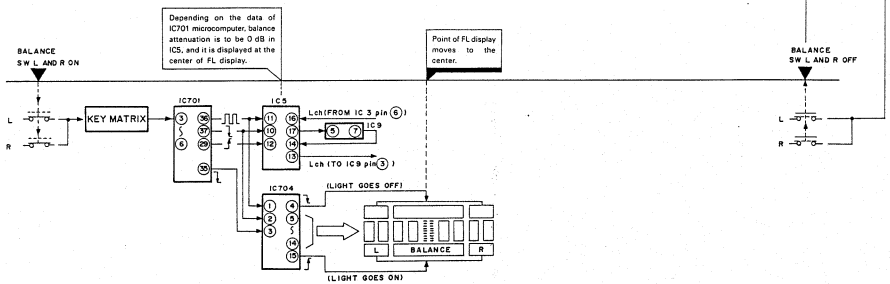
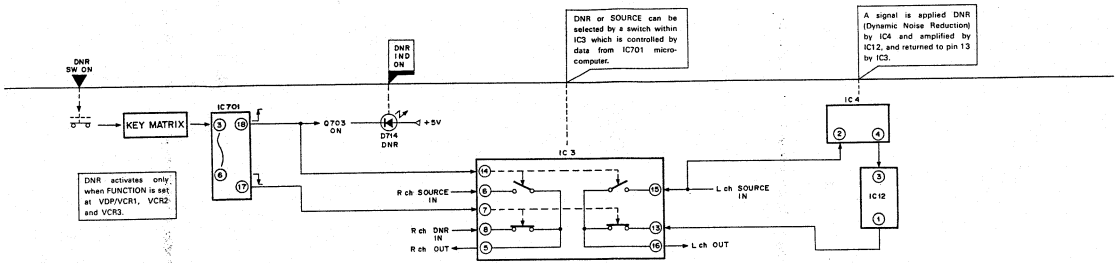


Fig. 3-2 Valance display VS. attenuation

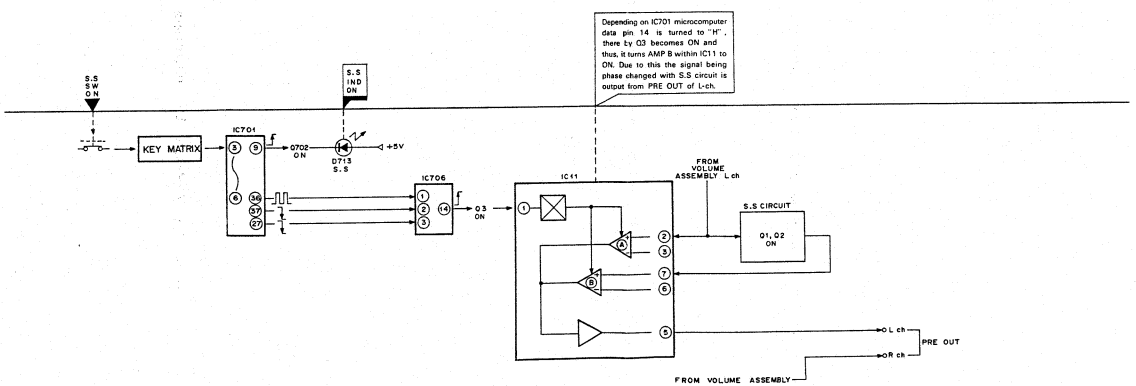
b. When Balance SW Lch and Rch are pressed simultaneously.



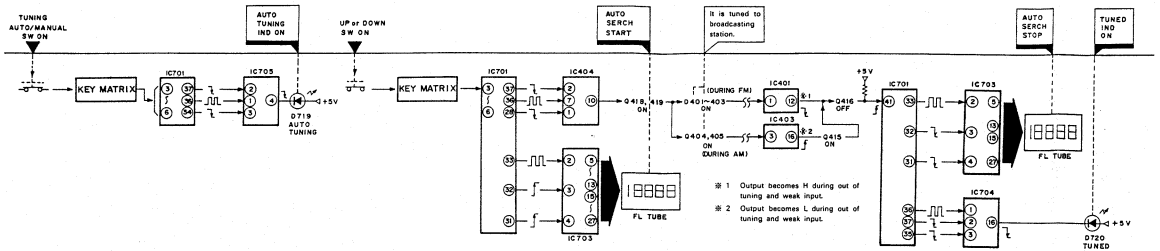
• DNR (DYNAMIC NOISE REDUCTION)


DNR SW ON
KEY MATRIX
IC701
0703 ON
D714 DNR
+5V
DNR IND ON
DNR or SOURCE can be selected by a switch within IC3 which is controlled by data from IC701 micro-computer.
A signal is applied DNR (Dynamic Noise Reduction) by IC4 and amplified by IC12, and returned to pin 13 by IC3.
IC4
IC3
IC12
DNR activates only when FUNCTION is set at VDP/VCR1, VCR2 and VCR3.
R ch SOURCE IN
L ch SOURCE IN
R ch DNR IN
R ch OUT
L ch OUT

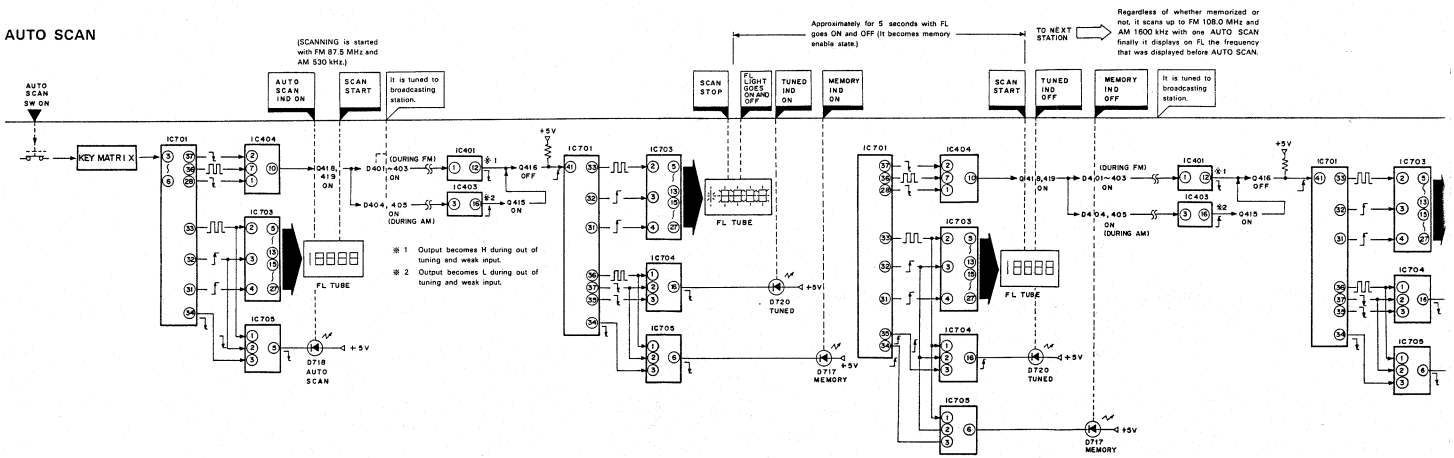
• S.S (SIMULATED STEREO)


S.S SW ON
KEY MATRIX
IC701
0702 ON
D713 S.S
+5V
S.S IND ON
Depending on IC701 microcomputer data pin 14 is turned to "H", there by Q3 becomes ON and thus, it turns AMP B within IC11 to ON. Due to this the signal being phase changed with S.S circuit is output from PRE OUT of L-ch.
IC706
Q3 ON
IC11
FROM VOLUME ASSEMBLY L ch
S.S CIRCUIT
Q1, Q2 ON
L ch
R ch
PRE OUT
FROM VOLUME ASSEMBLY

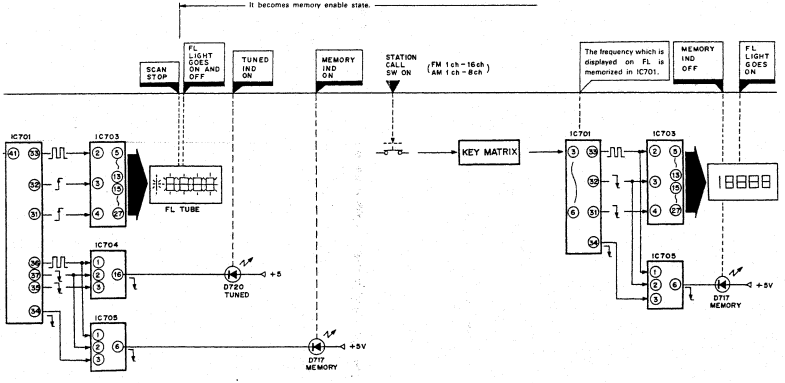
• AUTO TUNING



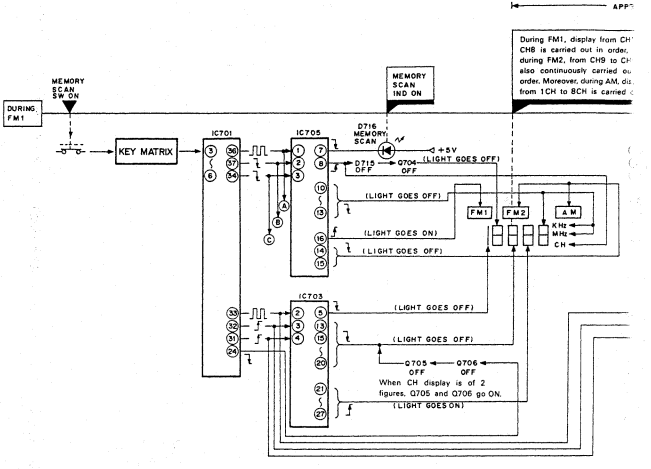
• AUTO SCAN

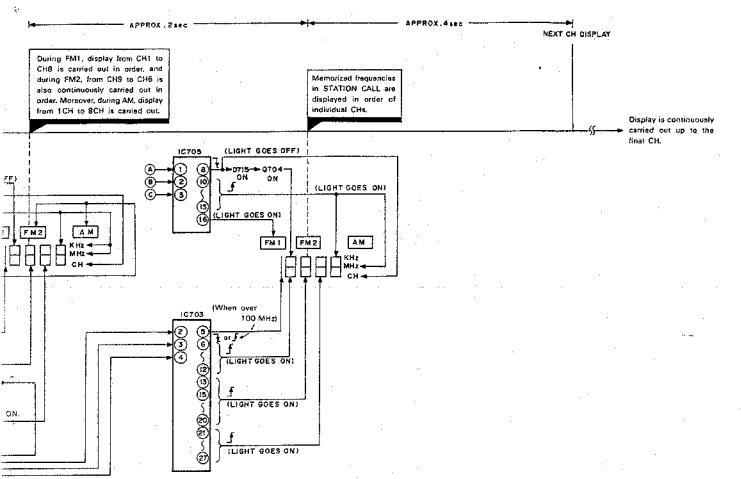

(SCANNING is started with FM 87.5 MHz and AM 530 kHz.)
AUTO SCAN SW ON
KEY MATRIX
IC701
IC404
IC703
IC705
AUTO SCAN IND ON
SCAN START
It is tuned to broadcasting station.
0418, 419 ON
(DURING FM)
0401-403 ON
IC401
※1
0416 OFF
IC403
※2
0404, 405 ON (DURING AM)
0415 ON
FL TUBE
※1 Output becomes H during out of tuning and weak input.
※2 Output becomes L during out of tuning and weak input.
0718 AUTO SCAN
+5V
Approximately for 5 seconds with FL goes ON and OFF (It becomes memory enable state.)
SCAN STOP
FL LIGHT GOES ON AND OFF
TUNED IND ON
MEMORY IND ON
IC704
0720 TUNED
0717 MEMORY
TO NEXT STATION
Regardless of whether memorized or not, it scans up to FM 108.0 MHz and AM 1600 kHz with one AUTO SCAN finally it displays on FL the frequency that was displayed before AUTO SCAN.
SCAN START
TUNED IND OFF
MEMORY IND OFF
It is tuned to broadcasting station.

SX-V500(BK)



• MEMORY SCAN




APPROX. 2sec
APPROX. 4sec
NEXT CH DISPLAY
During FM1, display from CH1 to CH8 is carried out in order, and during FM2, from CH9 to CH16 is also continuously carried out in order. Moreover, during AM, display from 1CH to 8CH is carried out.
Memorized frequencies in STATION CALL are displayed in order of individual CHs.
Display is continuously carried out up to the final CH.
IC705
(LIGHT GOES OFF)
Q715 ON
Q704 ON
(LIGHT GOES ON)
(LIGHT GOES ON)
FM1
FM2
AM
KHz
MHz
CH
IC703
(When over 100 MHz)
or
(LIGHT GOES ON)
(LIGHT GOES ON)
(LIGHT GOES ON)

4. IC DATA

■IC (PDE006) PIN DESCRIPTION

Pin No.	I/O	Name	Pin Description						
1	I	PA2	JAPAN/FOREIGN changeover input.					H: JAPAN	
2	I	PA3	Not used (GND).						
3	I	PB0	KEY MATRIX input.					Active: L	
4	I	PB1							
5	I	PB2							
6	I	PB3							
7	O	PC0	Electronic switch (TC9163N, TC9164N) Serial data output.					Active: H	
8	O	PC1	Electronic switch (TC9163N, TC9164N) Timing clock output.					Active: H	
9	O	PC2	LED DRIVE control output. (SIMULATED STEREO)					Active: H	
10	O	PC3	LED DRIVE control output. (LOUDNESS)					Active: H	
11	O	PD0	KEY MATRIX output (M74LS42P DATA output).					Active: H	
12	O	PD1							
13	O	PD2							
14	O	PD3							
15	O	PE0	Electronic switch (PA4008) control output.	TAPE 2 H	TAPE 2 L	L H	SOURCE, TAPE 1, ADAPTOR		
16	O	PE1		TAPE 2 L					
17	O	PE2		DNR L	DNR and DNR IND LED are lit.	H L	SOURCE		
18	O	PE3		DNR H					
19	I	RES	RESET input.					Active: L	
20	I	TEST	TEST terminal (connect to VSS).						
21	—	VSS	GND						
22	I	OSC1	Externally attached terminal for internal clock oscillating circuit.						
23	O	OSC2							
24	O	PF0	Segment (a1 through g1) light tuning off control output during CH display.					Active: L	
25	O	PF1	PLL (M54927P) TEST output						
26	O	PF2	EXPANDER (IC707: PD0012A) COUNTER RESET output.					Active: L	
27	O	PF3	EXPANDER (IC706: PD0012A) COUNTER RESET output.					Active: L	
28	O	PG0	PLL (M54927P) RESET output.					Active: L	
29	O	PG1	Electronic volume (TC9177P) ST output.					Active: H	
30	O	PG2	Electronic switch (TC9163N, TC9164N) ST output.					Active: H	
31	O	PG3	FL frequency display driving (TD6301AP)		Timing clock output.			Active: H	
32	O	PH0			Serial data output.			Active: H	
33	O	PH1							
34	O	PH2	EXPANDER (IC705: PD0012A) COUNTER RESET output.					Active: L	
35	O	PH3	EXPANDER (IC704: PD0012A) COUNTER RESET output.					Active: L	
36	O	PI0	Electronic volume, PLL EXPANDER (TC9163N, TC9164N, TC9177P, PD0012A)		Serial data output.			Active: H (PD0012A-U)	
37	O	PI1			Timing clock output.			Active: H (PD0012A-U)	
38	I	HOLD	HOLD mode requesting input (Connect to INT).					Active: L	
39	I	INT	Interruption requesting input (Connect to HOLD).					Active: L	
40	—	VDD	Power supply terminal (+5V)						
41	I	PA0	STOP requesting input during TUNING (AUTO), AUTO SCAN.					H: STOP	
42	I	PA1	AM 9k/10k step changeover input.					L: 9 kHz STEP	

■IC (TC9163N) PIN DESCRIPTION

- Block Diagram

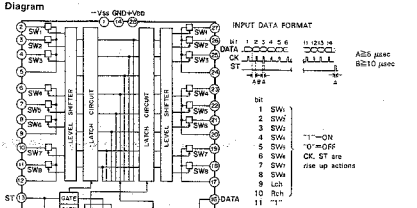


Fig. 4-1 Block diagram of TC9163N

- Truth Table 1 of TC9163N

DATA INPUT (⑱ pin)														SW*	FUNCTION	L CH (Pin)	R CH (Pin)
							(bit)									IN → OUT	IN → OUT
1	2	3	4	5	6	7	8	9	10	11	12	13	14				
1	0	0	0	0	0	0	0	1	1	1	1	0	0	SW1	TUNER	② → ⑤	㉓ → ㉔
0	1	0	0	0	0	0	0	1	1	1	1	0	0	SW2	PHONO	③ → ⑤	㉒ → ㉔
0	0	1	0	0	0	0	0	1	1	1	1	0	0	SW3	CD/AUX	④ → ⑤	㉑ → ㉔
0	0	0	1	0	0	0	0	1	1	1	1	0	0	SW4	VDP/VCR1	⑥ → ⑨	㉓ → ㉖
0	0	0	0	1	0	0	0	1	1	1	1	0	0	SW5	VCR2	⑦ → ⑨	㉒ → ㉖
0	0	0	0	0	1	0	0	1	1	1	1	0	0	SW6	VCR3	⑧ → ⑨	㉑ → ㉖
0	0	0	0	0	0	1	0	1	1	1	1	0	0	SW7	TAPE1	⑬ → ⑫	⑲ → ⑰
0	0	0	0	0	0	0	1	1	1	1	1	0	0	SW8	SOURCE	⑭ → ⑫	⑱ → ⑰

* This SW is an internal switch with in IC (See Fig. 4-1).

- Description of TC9163N

Pin No.	I/O	Description	Pin No.	I/O	Description
1	—	VSS	15	I	CK
2	I	Lch-SW1	16	I	DATA
3	I	Lch-SW2	17	O	Rch-COM3
4	I	Lch-SW3	18	I	Rch-SW8
5	O	Lch-COM1	19	I	Rch-SW7
6	I	Lch-SW4	20	O	Rch-COM2
7	I	Lch-SW5	21	I	Rch-SW6
8	I	Lch-SW6	22	I	Rch-SW5
9	O	Lch-COM2	23	I	Rch-SW4
10	I	Lch-SW7	24	O	Rch-COM1
11	I	Lch-SW8	25	I	Rch-SW3
12	O	Lch-COM3	26	I	Rch-SW2
13	I	ST	27	I	Rch-SW1
14	—	GND	28	—	VDD

■IC (PA4008) PIN DESCRIPTION

- Block Diagram

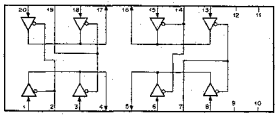


Fig. 4-3 Block diagram of PA4008

- Truth Table 2 of PA4008

FUNCTION	CONT INPUT (Pin)				L CH (Pin)	R CH (Pin)
	②	⑬	⑦	⑭	IN ⟶ OUT	IN ⟶ OUT
SOURCE, TAPE 1 ADAPTOR	L	H	H	H	① — ④	㉔ — ⑰
TAPE 2	H	L	H	H	③ — ④	⑱ — ⑰
DNR	H	H	L	H	⑧ — ⑤	㉓ — ⑯
SOURCE	H	H	H	L	⑥ — ⑤	⑮ — ⑯

- Description of PA4008

Pin No.	Pin Name	INPUT/OUTPUT	Pin No.	Pin Name	INPUT/OUTPUT
1	IN 1 (L CH)	INPUT	11	NC	—
2	CONT 1	INPUT(Active low)	12	VEE	—
3	IN 2 (L CH)	INPUT	13	IN 3 (R CH)	INPUT
4	OUT 1 (L CH)	OUTPUT	14	CONT 4	INPUT(Active low)
5	OUT 2 (L CH)	OUTPUT	15	IN 4 (R CH)	INPUT
6	IN 4 (L CH)	INPUT	16	OUT 2 (R CH)	OUTPUT
7	CONT 3	INPUT(Active low)	17	OUT 1 (R CH)	OUTPUT
8	IN 3 (L CH)	INPUT	18	IN 2 (R CH)	INPUT
9	VCC	—	19	CONT 2	INPUT(Active low)
10	SUB	—	20	IN 1 (R CH)	INPUT

■IC (M5201P) PIN DESCRIPTION

- Block Diagram

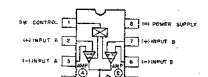


Fig. 4-4 Block diagram of M5201P

- Truth Table 3 of M5201P

SW CONTROL (Pin 1)	AMP Ⓐ	AMP Ⓑ	OUTPUT
L	ON	OFF	AMP Ⓐ
H	OFF	ON	AMP Ⓑ

SX-V500(BK)

■IC (TC9164N) PIN DESCRIPTION

- Block Diagram

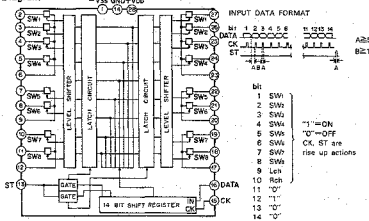


Fig. 4-5 Block diagram of TC9164N

- Truth Table 4 of TC9164N

DATA INPUT (⑭ pin)												(bit)	SW*	REC-SEL	L CH (Pin)	R CH (Pin)
1	2	3	4	5	6	7	8	9	10	11	12	13	14				IN ⟶ OUT	IN ⟶ OUT
1	0	0	0	0	0	0	0	1	1	0	1	0	0	SW1	SOURCE	② — ⑧	㉔ — ㉒
0	1	0	0	0	0	0	0	1	1	0	1	0	0	SW2	TUNER	③ — ⑧	⑱ — ㉒
0	0	1	0	0	0	0	0	1	1	0	1	0	0	SW3	PHONO	④ — ⑧	㉓ — ㉒
0	0	0	1	0	0	0	0	1	1	0	1	0	0	SW4	CD	⑤ — ⑧	⑭ — ㉒
0	0	0	0	1	0	0	0	1	1	0	1	0	0	SW5	VDP/VCR1	⑦ — ⑨	㉑ — ㉑
0	0	0	0	0	1	0	0	1	1	0	1	0	0	SW6	VCR2	⑧ — ⑨	㉑ — ㉑
0	0	0	0	0	0	1	0	1	1	0	1	0	0	SW7	ADAPTOR	⑬ — ⑫	⑲ — ⑰
0	0	0	0	0	0	0	1	1	1	0	1	0	0	SW8	SOURCE, TA1	① — ⑫	⑱ — ⑰

* This SW is an internal switch with in IC (See Fig. 4-5).

- Description of TC9164N

Pin No.	I/O	Description	Pin No.	I/O	Description
1	—	VSS	15	I	CK
2	I	Lch-SW1	16	I	DATA
3	I	Lch-SW2	17	O	Rch-COM3
4	I	Lch-SW3	18	I	Rch-SW8
5	I	Lch-SW4	19	I	Rch-SW7
6	O	Lch-COM1	20	O	Rch-COM2
7	I	Lch-SW5	21	I	Rch-SW6
8	I	Lch-SW6	22	I	Rch-SW5
9	O	Lch-COM2	23	O	Rch-COM1
10	I	Lch-SW7	24	I	Rch-SW4
11	I	Lch-SW8	25	I	Rch-SW3
12	O	Lch-COM3	26	I	Rch-SW2
13	I	ST	27	I	Rch-SW1
14	—	GND	28	—	VDD

SX-V500(BK)

■ IC704 ~ 707 (PD0012A) IC PIN DESCRIPTION

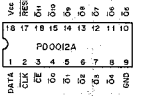


Fig. 4-6 External apperance of PD0012A

• Description of PD0012A

PIN NO.	PIN NAME	IC704 DESCRIPTION	ACT -IVE	IC705 DESCRIPTION	ACT -IVE	IC706 DESCRIPTION	ACT -IVE	IC707 DESCRIPTION	ACT -IVE
1	DATA	DATA INPUT TERMINAL	—	DATA INPUT TERMINAL	—	DATA INPUT TERMINAL	—	DATA INPUT TERMINAL	—
2	CLK	CLOCK INPUT TERMINAL	L	CLOCK INPUT TERMINAL	L	CLOCK INPUT TERMINAL	L	CLOCK INPUT TERMINAL	L
3	CE	COUNTER RESET TERMINAL	L	COUNTER RESET TERMINAL	L	COUNTER RESET TERMINAL	L	COUNTER RESET TERMINAL	L
4	O0	FL [MIN] [VOL] [MAX]	H	LED AUTO/MANUAL	L	E-SW (VIDEO) VCR2	L	E-SW REC SEL (VIDEO) VCR2	L
5	O1	FL ■ (B1)	H	LED AUTO SCAN	L	LED TAPE2	L	E-SW REC SEL (VIDEO) SOURCE	L
6	O2	FL ■ (62)	H	LED MEMORY	L	E-SW (VIDEO) VDP/VCR1	L	E-SW REC SEL (VIDEO) VDP/VCR1	L
7	O3	FL ■ (B3)	H	LED MEMORY SCAN	L	LED TAPE1	L	E-SW (VIDEO) & LED (ADAPTOR VIDEO)	L
8	O4	FL ■ (64)	H	FL CH	H	LED PHONO	L	E-SW (VIDEO) VCR3	L
9	GND	GND	—	GND	—	GND	—	GND	—
10	O5	FL ■ (B5)	H	FL 1Hz	H	LED CD/AUX	L	LED REC SEL VCR2	L
11	O6	FL ■ (66)	H	FL MHz	H	LED VDP/VCR1	L	LED REC SEL VDP/VCR1	L
12	O7	FL (67) ■	H	FL CD	H	LED VCR2	L	LED REC SEL CD/AUX	L
13	O8	FL (68) ■	H	FL TAPE	H	LED VCR3	L	LED REC SEL PHONO	L
14	O9	FL (B9) ■	H	FL AM	H	E-SW SIMULATED STEREO	L	LED REC SEL TUNER	L
13	O10	FL [LEFT] [BAL] [RIGHT]	H	FL FM2	H	FM +B	L	LED REC SEL SOURCE	L
16	O11	LED TUNED	L	FL FM1	H	AM +B	L	LED ADAPTOR AUDIO	L
17	RESET	LATCH RESET INPUT	L	LATCH RESET INPUT	L	LATCH RESET INPUT	L	LATCH RESET INPUT	L
18	VCC	VCC	—	VCC	—	VCC	—	VCC	—

■ KEY MATRIX

BCD output of PD0 to PD3 (pins 11 to 14) of IC701 (RECEIVER CONTROL IC) is 4 bits and it sends data by sequentially repeating 0 through 9 with a high speed. This data is input to BCD input pin of DA to DD (pins 15 to 12) of BCD DECIMAL DECODER which is called M74LS42P (IC702), and it is converted from binary code into decimal code and, output from the individual decimal output pins Y0 to Y9 (pins 1 to 7 and 9 to 11). At that point, the output is synchronous with the input signal to output "L" to Y0 to Y9 sequentially repeatedly. (See TRUTH TABLE 5) Input of PB0 to PB3 (pins 3 to 6) of IC701 is being pulled up and it is normally "H". For example, if the switch of VCR3 is pressed, at this moment IC702 is outputting "L" from Y0 to Y9 sequentially repeatedly, therefore, when switch of VCR3 is pressed, Y3 becomes "L" instantaneously, at that time, IC701 PB2 pin which has been pulled up in "H" is turned to "L" in pulse shape through the switch. (See Fig. 4-8) By detecting pin PB2 is being turned "L" with IC in a microcomputer, and the KEY MATRIX is operated in accordance with the program in the microcomputer.

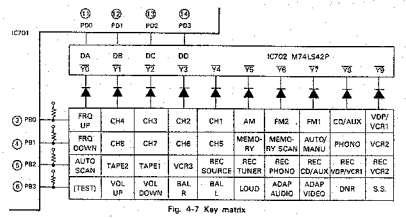


Fig. 4-7 Key matrix

• Truth Table 5 of M74LS42P

Decimal Counter	INPUT DD	DC	DB	DA	OUTPUT Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9
0	L	L	L	L	L	H	H	H	H	H	H	H	H	H
1	L	L	L	H	H	L	H	H	H	H	H	H	H	H
2	L	L	H	L	H	H	L	H	H	H	H	H	H	H
3	L	L	H	H	H	H	H	L	H	H	H	H	H	H
4	L	H	L	L	H	H	H	H	L	H	H	H	H	H
5	L	H	L	H	H	H	H	H	H	L	H	H	H	H
6	L	H	H	L	H	H	H	H	H	H	L	H	H	H
7	L	H	H	H	H	H	H	H	H	H	H	L	H	H
8	H	L	L	L	H	H	H	H	H	H	H	H	L	H
9	H	L	L	H	H	H	H	H	H	H	H	H	H	L
10	H	L	H	L	H	H	H	H	H	H	H	H	H	H
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
15	H	H	H	H	H	H	H	H	H	H	H	H	H	H

Ex: When VCR3 is pressed.

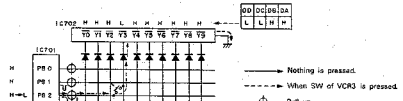


Fig. 4-8 Movement of keymatrix

■FLUORESCENT TUBE PIN DESCRIPTION

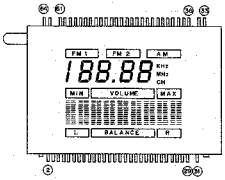


Fig. 4-9 External apperance of fluorescent tube

• Segmental Explanation

Fig. 4-10 Segmental explanation of fluorescent tube

• Description of Fluorescent Tube

Pin No.	DESCRIPTION	Pin No.	DESCRIPTION	Pin No.	DESCRIPTION	Pin No.	DESCRIPTION
1	NO PIN	17	GRID	33	FILAMENT	49	a2
2	FILAMENT	18	B1	34	FILAMENT	50	d2
3	Dispersion GRID	19	B2	35	NO PIN	51	e2
4	Dispersion GRID	20	B3	36	CH	52	f2
5	GRID	21	B4	37	GRID	53	g2
6	b5, c5	22	GRID	38	kHz	54	GRID
7	g4	23	B5	39	e1, c1, d1, f1, MHz, DOT	55	f3
8	f4	24	B6	40	b1, a1	56	e3
9	e4	25	B7	41	g1	57	d3
10	d4	26	B8	42	AM	58	c3
11	GRID	27	B9	43	GRID	59	b3
12	c4	28	GRID	44	FM2	60	GRID
13	b4	29	L, BALANCE, R	45	FM1	61	a3
14	a4	30	NO PIN	46	c2	62	NO PIN
15	g3	31	FILAMENT	47	b2	63	FILAMENT
16	MIN, VOLUME, MAX	32	NO PIN	48	GRID	64	FILAMENT